A CASE STUDY OF A SEVENTEENTH-CENTURY GATEKEEPER: THE ROLE OF NICOLAS-CLAUDE FABRI DE PEIRESC IN THE DISSEMINATION OF SCIENCE THROUGH THE CORRESPONDENCE NETWORKS

BY

JANE THORNTON TOLBERT

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To Sandra and Alexis

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LIST OF ABBREVIATIONS

GL Lettres familières à François Luillier pendant l'hiver, 1632-1633.

MC Correspondance du Père Mersenne.

MO Oeuvres de Malherbe.

PC Les correspondants de Peiresc: Lettres inédites, publiées, et annotées.

PL Lettres de Peiresc.

PM Peiresc: Lettres à Malherbe (1606-1628).

PN Peiresc: Lettres à Naudé.

PV Correspondance de Peiresc avec plusieurs missionaries et religieux de l'ordre des capuchins, 1631-1637.

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By

Jane Thornton Tolbert

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Chairman: Dr. F. Leslie Smith
Major Department: Mass Communication

With official channels of communication regulated by censors, many natural philosophers exchanged information in the private academies and correspondence networks, or they used rhetorical strategies to publicize views. Other natural philosophers sought the protection of a patron with ties in the church and crown.

As a gatekeeper in correspondence networks, Nicolas-Claude Fabri de Peiresc (1580-1637) was instrumental in the development and dissemination of a new science throughout seventeenth-century Europe. He transformed the existing networks of the Republic of Letters into scientific channels of communication, often sending telescopes and astronomical instructions to correspondents in Europe and the Levant. During his career, he corresponded with more than 500

individuals. As an intermediary between scholars in France and Italy, Peiresc communicated Galileo's innovations and telescopic observations. His family wealth, social position, and prestige enabled him to legitimize scientific activity as a means of gaining knowledge, at a time of oppression, when new ideas threatened traditional social, political, and religious order. His ties with influential circles in Rome enabled him to ask for a mitigated sentence for Galileo and pursue astronomy at a time when the Copernican propositions were condemned.

Peiresc used the promise of gifts and improved social status, as well as rational arguments to ensure compliance with his requests for telescopic observations from missionary priests. The acceptance of patronage implied the need to reciprocate or risk the loss of status. He sent astronomical instruments and instructions to correspondents and established a training program for work in determining terrestrial longitude. The standardization of instruments and directions actually served to define the context in which claims could be made and to determine acceptable evidence. While letters carried detailed descriptions and information on procedure and viewing, and the names of witnesses, their key function was to persuade reader of the plausibility of the claim. By communicating the results of telescopic observations through Europe, Peiresc secured recognition for the activities of the Provençal School.

CHAPTER 1
INTRODUCTION

Gatekeepers[1] played a critical role in the dissemination of early modern science through seventeenth-century correspondence networks. Perceptive of the interests and needs of correspondents, these individuals held the authority to transmit, adapt, or retain information. One of the more noteworthy gatekeepers in seventeenth-century France was Nicolas-Claude Fabri de Peiresc (1580-1637). His family wealth, education at French and Italian universities, and membership in prestigious circles enabled him to cross social boundaries. As a magistrate of Parlement and a cleric, Peiresc could legitimize scientific activity at a time of censorship. Recognized for his erudition in many scientific disciplines, he was instrumental in the dissemination of scientific innovation through the correspondence networks.[2]

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[1]In communication theory, the term gatekeepers is used to describe those individuals controlling information flow between sources and the public. Bazerman has used this term to describe the role of Henry Oldenburg as editor of the first scientific journal, Philosophical Transactions. Charles Bazerman, Shaping Written Knowledge: The Genre and Activity of the Experimental Article in Science (Madison: University of Wisconsin Press, 1988), 136-138.

[2]Mersenne to Doni on Peiresc, 2 Feb 1635, MC 5: 41.

From the south of France, Peiresc used gifts and the promise of patronage to solicit information from his correspondents. When he asked a missionary priest to observe the lunar eclipse of 1635 from one of the great pyramids in Egypt, he sent a gift of a telescope and a silver chalice as a reminder of obligations.[3] On other occasions Peiresc sent Angora cats, mummies, rare manuscripts, or the odd gazelle to motivate correspondents to cooperate with requests for information and services or as a reminder of friendship and loyalty at a time of oppression. Under the direction of Peiresc, the scientific community in Aix-en-Provence established a protocol of communication, cooperation, and reward for investigations of nature.[4]

Nicolas-Claude Fabri de Peiresc

Born at Belgentier in 1580 into a noble family, Peiresc was educated to assume his uncle's position in the Parlement[5] of Aix-en-Provence. Peiresc and his younger brother, Palamède, studied astronomy at the Jesuit school

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[3]Peiresc to Agathange de Vendôme, 28 May 1635, PV 141; 12 Sept 1635, PV 171.

[4]Barry Barnes and David Edge, eds., "The Organization of Academic Science: Communication and Control," Science in Context: Readings in the Sociology of Science (Cambridge, MA: The MIT Press, 1982), 15.

[5]David T. Pottinger, The French Book Trade in the Ancien Regime, 1500-1791 (Cambridge, MA: Harvard University Press, 1958), 354.

of Tournon. At the universities of Aix and Avignon, the brothers began reading law and philosophy, formally continuing their education at the University of Padua (1599-1601).

The University of Padua was famous for its law school and its Aristotelian teachings in sciences and mathematics. As an anti-clerical school, it provided a forum for many theological issues prohibited in the French universities,[6] which stressed reading and commentary on the texts of Aristotle and the Holy Scriptures.[7] While in France, an examination of theological issues was permitted only among theologians,[8] at Padua debates centered on the immortality of the soul, the nature of matter, and rational proof of existence.[9]

Many of the innovative thinkers of this period were educated here. Copernicus studied at Padua in the sixteenth century, as did William Harvey, who made the

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[6]The University of Paris had four faculties: arts, law, medicine, and theology.

[7]Ira Wade, The Intellectual Origins of the French Enlightenment (Princeton, NJ: Princeton University Press, 1971), 62-63.

[8]Pearl Kibre and Nancy G. Siraisi, "The Institutional Setting: The Universities," Science in the Middle Ages, ed. David C. Lindberg (Chicago: University of Chicago Press, 1978), 120-141 passim.

[9]Wade, 63-65.

first accurate examinations of the circulatory system.[10] Peiresc studied under Galileo, who privately admitted to supporting the Copernican hypothesis.[11]

Presumably Peiresc and Palamède went to Padua for law school. But here, Peiresc filled his spare time with his visits to archaeological sites and participation in influential circles, including those of the humanist Giovanni Vincenzo Pinelli (Padua), of Cardinal Robert Bellarmine (Rome), and of the physician Giambattista della Porta (Naples).[12]

Peiresc did not return to Aix upon completion of his studies in Italy. Instead, he shipped crates of artifacts to his father, refused an arranged marriage, probably asked for an increase in allowance, and continued his studies in Montpellier under the direction of a well-known Protestant jurisconsult, Pacius de Beriga.[13]

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[10]Charles Coulston Gillispie, The Edge of Objectivity: An Essay in the History of Scientific Ideas (Princeton, NJ: Princeton University Press, 1960), 20, 68-69.

[11]Stillman Drake, Discoveries and Opinions of Galileo, trans., intro, and notes by Stillman Drake (Garden City, NY: Doubleday, 1957), 15, 71.

[12]Pierre Humbert, Un amateur: Peiresc (1580-1637) (Paris: Desclée de Brouwer et cie., 1933), 31-32.

[13]During his travels and education, Peiresc collected approximately 300 medals, numerous books and manuscripts, and two crates of ancient objects, as well as gifts for his family. Humbert, Amateur, 38.

After studying law at the University of Montpellier and receiving his doctorate from the University of Aix in 1604, Peiresc traveled extensively throughout France and Europe before assuming his position with the Parlement of Aix in 1607.[14] He accompanied Guillaume du Vair, chief justice of the Parlement (Aix), to Paris; here he was introduced to Jacques-Auguste de Thou I, uncle of Pierre and Jacques Dupuy and founder of the famous academy, later known as the Cabinet Putéane or Dupuy. Peiresc began what became a lifelong correspondence with the Brothers Dupuy, comparing their letters on the "theatre of the court" with Galileo's telescope, which enhanced observation of the skies. Peiresc established contacts with many humanists and natural philosophers throughout England, Holland, and Belgium, only formally assuming his duties as a magistrate in Parlement on 24 June 1607.

Peiresc's work as a magistrate involved attending trials, registering and implementing laws in Provence, and serving Du Vair.[15] Early in his legal career, Peiresc was charged with ensuring the historical accuracy of a mural in the Palace of Justice depicting the French kings. This work involved historical research including a visit by

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[14]Humbert, Amateur, 41-47.

[15]Jules-Marie Priou, "Magistrat et citoyen français," Les fioretti du quadricentenaire de Fabri de Peiresc, ed. Jacques Ferrier (Avignon: Académie du Var, 1988), 81-96.

Palamède to the tomb of Charlemagne to make sketches.[16] In 1618, Peiresc earned intellectual renown and royal patronage for his work in genealogy by disproving claims that the King of Spain was heir to the French throne.[17] Louis XIII awarded Peiresc a clerical title, Abbot of Guîtres,[18] for this work. Peiresc entered the priesthood, but retained his position in Parlement through a special permission from Louis XIII and the pope to serve at criminal trials.[19] The position as abbot proved to be an honor and a burden. Peiresc went to great effort to restore and maintain the abbey near Bordeaux, a venture fraught with problems and political implications.[20]

Peiresc's avid interest in numerous disciplines bought him into contact with erudite groups throughout Europe. His friendship with the cleric astronomer Pierre Gassendi developed into scientific collaboration, while letters from Paolo Gualdo (Padua) and Elie Diodati (Paris) kept him informed of Galileo's activities.

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[16]Humbert, Amateur, 64-65.

[17]Georges Cahen-Salvador, Un grand humaniste: Peiresc (1580-1637) (Paris: Albin Michel, 1951), 84.

[18]This title was recognized by Pope Paul V on 5 Jan 1619.

[19]Humbert, Amateur, 117.

[20]Jean Clément, "Peiresc et le monastère de Guîtres," Les fioretti du quadricentenaire de Fabri de Peiresc, ed. Jacques Ferrier (Avignon: Académie du Var, 1988), 75-80.

Exchanging letters with more than 500 individuals scattered throughout Europe and the Mediterranean basin,[21] Peiresc played an important role in organizing and extending correspondence as a means of scholarly communication.[22] But Peiresc selected and cultivated his correspondents.

> Peiresc did not send inquiries to anyone, but this Prince des curieux inquired beforehand, or the personality of his intended correspondents, of their tastes in order to coerce or flatter them. No one other than Peiresc knew how to obtain what he wanted: gentleness, persuasion, ruse. . . threats, supplications, are used in turn to achieve his goals.[23]

Although the press provided a means of wide dissemination of information, radical ideas could be dissimulated in publications by using rhetorical strategies. Personal letters offered many advantages, notably rapid exchanges and the evasion of censors.

Peiresc's closest friend, Pierre Gassendi, wrote that the Provençal magistrate was much admired "for his

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[21]Robert Mandrou, From Humanism to Science, 1480-1700, trans. Brian Pearce (Middlesex, UK: Penguin, 1978), 189.

[22]Harcourt Brown, Scientific Organizations in Seventeenth Century France (New York: Russell and Russell, 1934), 5.

[23]Sydney Aufrère and Marie-Pierre Foissy-Aufrère, "Peiresc, ses émissaires et ses correspondants de l'échelle d'Égypte," Égypte et Provence (Avignon: Fondation du Musée Calvet, 1985), 182.

sparkling wit and most temperate manners."[24] The libertine Jean-Jacques Bouchard described him as "without equal in Europe for courtesy and kindness as well as for wisdom in science. . . . [T]here is not a kingdom, country, or famous town in which he does not have a correspondent."[25] Bouchard wrote that Peiresc was "respectful in conversation but with an imperious expression making him respected in his house."[26]

His correspondents addressed him as a man dominating other scholars[27] or as a "castaway from antiquity."[28] In private exchanges, his friends portrayed him as jealously guarding his role as gatekeeper in correspondence networks.[29] Peiresc encouraged his bookbinder, Simon Corberan, in astronomical observations[30] and awarded the Prior Guillemin with improved status. Yet he did not spare harsh words when his requests were not fulfilled or when a

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[24]Pierre Gassendi, Book 1, The Mirrour of True Nobility and Gentility, trans. William Rand (London: J. Streater, 1657), 27.

[25]Jean-Jacques Bouchard, Les confessions de Jean-Jacques Bouchard suivies de son voyage de Paris à Rome en 1630 (Paris: Isidore Liseux, 1881), 126-127.

[26]Bouchard, Voyage, 131.

[27]Saumaise to Peiresc, 1 June 1635, PC 1: 262.

[28]PC 2: 267.

[29]Gassendi to Luillier, 9 Nov 1632, GL 8; 4 Dec 1632, GL 19.

[30]Gassendi to Peiresc, 7 Feb 1634, PL 4: 453.

breach of protocol occurred. He was generous with his books and collections; he rewarded requests for information or services with gifts or the promise of patronage.

On the death of the great humanist and bibliophile Pinelli in 1601, Gualdo wrote, "If our century knows a second Pinelli, it will be Nicolas Fabri."[31] Peiresc considered himself "heir" to the Pinelli tradition. He maintained the correspondence networks and sought occasion to serve those who "honored him with their friendship."[32]

The geographical location of Aix and Belgentier, the distance from Paris and proximity to the ports of Marseilles and Toulon made Peiresc's homes convenient stopping places for scholars traveling between Europe and the Levant. Cardinal Francesco Barberini, nephew of the pope, visited in 1625. Missionary superiors advised priests to receive training with Peiresc and to bring instruments to the Levant to continue the work in a method of determining terrestrial longitude.[33] With the help of two local clerics, Pierre Gassendi of Digne and Joseph Gaultier of la Valette, Peiresc established the Provençal School, which became the center of European astronomy.

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[31]Humbert, Amateur, 36.

[32]Peiresc to Clusius, 18 Jan 1602, PL 7: 941.

[33]Agathange de Vendôme to Pierre de Guingamp and Agathange de Morlaix, 22 April 1636, PV 225-230.

Peiresc's social status and family wealth enabled him to acquire rare manuscripts and patronize scholarship.[34] Not only was Peiresc remembered as a bibliophile and collector, but as willing to share his books, collections, and research. It has been said that these collections did not belong to Peiresc, but to "all the savants of Europe as his residence provided a haven for the erudite."[35] Given the depth of his scholarship and the meticulous records of observations, one would expect Peiresc to publish. For many intellectuals, dedication of scholarly treatises offered a means of enhancing personal prestige. Instead, Peiresc said he preferred to share his "little ideas and fantasies" with a few friends,"[36] to serve as a "midwife" to scholarly works of others.[37] He secured recognition through the quality of his work, his patronage and training of missionary priests in astronomy, and the coordination of international scientific activities.

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[34]Jean Bernhardt, "Les activités scientifiques de Nicolas-Claude Fabri de Peiresc (1580-1637)," Nouvelles de la republique des lettres 2 (1981): 166.

[35]Isaac Uri, Un cercle savant au xviie siècle: François Guyet (1575-1655) (Paris: Hachett, 1886), 41.

[36]Peiresc to the Brothers Dupuy, 9 May 1634, MC 4: 115.

[37]Peiresc to Gilles de Loches, 3 July 1634, PV 60.

Peiresc had to overcome personal obstacles in carrying out his research. Tension prevailed in the house he shared with Palamède, a niece, and a nephew. His nephew Claude showed little concern for Peiresc's collections of curiosities. And, as fate would have it, after Peiresc's death, one niece used his letters as beds for silk worms and as paper twists.[38]

Although Peiresc suffered from numerous ailments throughout his life, illness did not affect his zeal for research or astronomical observations. On one occasion, he complained of paralysis of the right side of his body resulting in a temporary loss of speech and movement.[39] He often sought remedies from doctors or relied on herbal teas and what he believed to be the curative properties of musk melons.[40] He suffered from attacks of nephritis, kidney stones, and gout.[41] On 24 June 1637, Peiresc died.[42] Gassendi was with him at the time of death and later recorded in his journal, "Every night the sky was beautiful

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[38]E. J. B. Ratherym "Peiresc," Nouvelle biographie générale (Paris: Firmin Didot, 1862), 465.

[39]Peiresc to the Brothers Dupuy, 23 May 1631, PL 2: 272.

[40]Yvan Verd, "Peiresc et les médecins," Les fioretti du quadricentenaire de Fabri de Peiresc (Avignon: Académie du Var, 1988), 123-124.

[41]Gassendi to Peiresc, 6 July 1635, PL 4: 537; Peiresc to the Brothers Dupuy, 26 Dec 1631, PL 2: 287.

[42]Humbert, Amateur, 275.

but I did not have the heart to observe because of the illness [of Peiresc] that began the 10th [of June], and because of the painful death which occurred this 24th, a little before 3 o'clock in the afternoon."[43]

Achievements

Peiresc's esteemed friend and colleague, Gassendi, portrayed him as "dominating" other scholars and going beyond book learning to the study of things in themselves.[44] Peiresc combined an interest in antiquity with numismatics and, as the story goes, gained recognition in his youth for his identification of a Roman coin found at nearby Fréjus. His studies in philology were complemented by investigations of astronomy. Peiresc maintained that references to a lunar eclipse during the battle of Arbela of 331 B.C.[45] would permit the determination of the distance to Carthage, destroyed in 146 B.C.[46] His investigations of red droplets--commonly known as rains of blood--covering the Provençal countryside and viewed as a presage, demonstrated his application of the

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[43]Gassendi, quoted in Humbert, Amateur, 275-276.

[44]Claude Saumaise to Peiresc, 1 June 1635, PC 2: 262-263.

[45]Alexander the Great was credited with the defeat of Darius III of Persia in 331 B.C.

[46]See Peiresc to Arcos, 18 Oct 1635, PL 7: 164; 30 May 1636, PL 7: 178.

scientific method to natural phenomena and his willingness to question traditional explanations. In astronomy, Peiresc stressed the need for long-term telescopic observations of planetary movements and the standardization of instruments and instructions.

As a powerful patron with connections in many influential circles, Peiresc was able to promote scientific activities at a time when the church used censorship and the Inquisition to reestablish its waning authority. He exploited friendships and used patronage to organize telescopic observation stations through Europe and the Levant for work on determining terrestrial longitude. He circulated Galileo's Dialogue Concerning the Two Chief World Systems, condemned in 1633, through the correspondence networks to the broader scientific community. As a gatekeeper in correspondence networks, Peiresc played an instrumental role in the development and communication of scientific activities in early seventeenth-century France.[47]

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[47]Increasing scholarship has been directed to the importance of these individuals in the dissemination and development of early modern science. Among recent works are those by: Peter Dear, Mersenne and the Learning of the Schools (Ithaca: Cornell University Press, 1988); Robert A. Hatch, The Collection Boulliau (BN, FF. 13019-13059), An Inventory (Philadelphia: The American Philosophical Society, 1982); Lynn Sumida Joy, Gassendi the Atomist: Advocate of History in an Age of Science (Cambridge: Cambridge University Press, 1987); and David S. Lux, Patronage and Royal Science in Seventeenth-Century France (Ithaca, NY: Cornell University Press, 1989).

Amateur or "Proto-scientist"?

The amateurs or virtuosi of the seventeenth century professed an interest in the arts and sciences and displayed a passion for collecting curiosities. But they showed little concern for the social value of research.[48] These amateurs were not seeking the advance of knowledge or material progress. They were merely pursuing an interest.

In his Annales celestes, the eighteenth-century astronomer Alexandre-Guy Pingré made the following entry for the year 1637: "This year astronomy lost, not quite a great astronomer, but an amateur to whom astronomy, [and] physics . . . have the greatest obligations."[49] Because of his diverse interests, encyclopedic knowledge, and absence of publications, Peiresc has been described as an amateur. But his vast erudition, numerous journals of observations, and collections of curiosities[50] lend support to Gassendi's assessment that Peiresc "does not neglect anything and takes advantage of all he can."[51] Be it measuring

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[48]Walter E. Houghton, Jr., "The English Virtuoso in the Seventeenth Century," Journal of the History of Ideas 3 (1942): 53-55.

[49]Alexandre-Guy Pingré, Annales celestes, ed. Guillaume Bigourdan (Paris: Gauthier-Villars, 1901), 121.

[50]Françoise Charles-Daubert, "Libertinage et érudition: Peiresc relais de l'Europe savante," Peiresc ou la passion de connaître, ed. Anne Reinbold (Paris: J. Vrin, 1990), 47.

[51]Gassendi to Diodati, 29 Aug 1634, MC 4: 340.

elephants, organizing telescopic observations, or dissecting chameleons, Peiresc never lost an occasion to learn. He wrote that he "let no opportunity escape . . . For as much as experience uncovers pure truth, and insofar as I can devote myself to this work in peace and quiet, I would let no day pass without some research."[52]

A desire for knowledge led Peiresc to seek distant correspondents. His requests for information and services were accompanied by gifts, which obliged correspondents to respond. By sending instruments, instructions, and a model for reporting astronomical observations, Peiresc specified the criteria for observations and defined a "rhetorical site"[53] in which scientific claims could be made.

Peiresc represented a departure from the traditional use of ancient textual authorities to support claims about nature, maintaining that observation and inquiry would provide the foundations of a new science.[54] Peiresc advocated the need for "conclusive proof" as opposed to the earlier tendency to base claims on "simple conjecture."[55]

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[52]Peiresc to the Brothers Dupuy, 7 April 1633, PL 3: 466.

[53]The author would like to thank Christian Gregory, who stressed the need to examine the rhetorical site of scientific communication. Personal Communication, Gainesville, FL, fall 1991.

[54]Peiresc to Arcos, 17 Oct 1634, PL 7: 142.

[55]Peiresc to Gassendi, 13 Nov 1633, PL 4: 383.

He often emphasized that several observations of the heavens would correct misconceptions about astronomy. To legitimize this new empirical approach, he spoke of study of the Book of Nature as a means of gaining knowledge of God and demonstrated that scientific activity led to material progress.[56]

Peiresc did not serve only to transmit scientific initiatives, but he extended correspondence networks and developed a research program.[57] As a liaison between scholars in France and Italy, Peiresc communicated Galileo's discoveries and introduced the telescope to Northern Europe. He developed a research program at the Provençal School and advanced practical applications of astronomy as shown by his method of determining terrestrial longitude.

His quest for information was not limited to astronomy; his inquiries cover a range of topics. He developed plans for transporting water to Aix.[58] He studied the rituals and traditions of the natives of Guinea

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[56]Peter Dear, "Totius in verba: Rhetoric and Authority in the Early Royal Society," Isis 76 (1985): 146.

[57]Peiresc's role as organizer of the new science was similar to that of the seventeenth-century editor of the Philosophical Transactions, Henry Oldenburg. Marie Boas Hall, "Oldenburg and the Art of Scientific Communication," Journal for the History of Science 2 (1965): 286.

[58]Peiresc to Mersenne, 1 May 1635; MC 4: 110; and 8 May 1635, MC 5: 176.

and solicited information on customs in Ethiopia.[59] He inquired about the location of marine fossils in Italian mountains,[60] the eruption of Vesuvius,[61] and religious practices based on sun worship.[62]

Devoting his career to the cultivation of correspondents, Peiresc recognized the importance of communication and reward to secure information and cooperation. On his death, scientific activities of the Provençal School and exchanges of information through personal correspondence networks were interrupted. Within 20 years, the deaths of Mersenne (1648), Gassendi (1655), and the Brothers Dupuy (Pierre Dupuy in 1651; Jacques Dupuy in 1656) brought an end to an era of scientific innovation in private academies. Emphasis changed from telescopic discovery and group endeavor to isolated individual work in the so-called Parisian school, and to teaching in the Jesuit schools.[63] The establishment of the Accademia del Cimento (Florence, 1657) and the Royal Society of London

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[59]Paul Amargier, "Peiresc et Marseille," Les fioretti du quadricentenaire de Fabri de Peiresc, ed. Jacques Ferrier (Avignon: Académie du Var, 1988), 99.

[60]Peiresc to Menestrier, 22 Feb 1629, PL 5: 559.

[61]Peiresc to the Brothers Dupuy, 4 July 1633, PL 2: 554-555.

[62]Peiresc to Arcos, 25 Jan 1634, PL 7: 123.

[63]Pierre Humbert, "Les astronomes français de 1610 à 1667," Bulletin de la Société d'études scientifiques et archéologiques de Draguignan 44 (1942): 7-9.

(1662) indicated the need for an equivalent French institution. After the founding of the Paris Academy of Sciences (1666), most astronomical activity was carried out under the auspices of a state-supported and controlled institution, which limited endeavors to acceptable topics.[64] Scientific activity was directed toward the glorification of the king and the power of France.

Purpose

Communication is a critical component of scientific activity, offering a means of establishing priority of discovery, popularizing innovation, and of mobilizing research funding.[65] Through communication, claims can be transformed from speculation into knowledge.[66]

Hundreds of journals are available today for the publication of scientific findings. In the seventeenth-century, books, broadsides, and newspapers, provided the means of communication. But control by clerical and royal censors and publication delays forced natural philosophers to exchange information in personal correspondence networks.

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[64]Roger Hahn, The Anatomy of a Scientific Institution: The Paris Academy of Sciences, 1666-1803 (Berkeley: University of California Press, 1971), 10.

[65]Bazerman, 22-23.

[66]Bruno Latour, Science in Action: How to Follow Scientists and Engineers Through Society (Cambridge, MA: Harvard University Press, 1987), 26-29.

Prior to the emergence of the periodical press in France (ca. 1631) and the first scientific journals (ca. 1666), personal correspondence played a significant role in the development and dissemination of early modern science. Barring plague or civil unrest, letters sent through the postal system took from five[67] to nine days to travel between Aix-en-Provence in the south of France and Paris, while letters exchanged between Paris and Rome took approximately nine to 14 days through the papal courier service.[68] In addition to expediting the exchange of information, correspondence offered a means of evading censors of the Faculty of Theology or the Sorbonne. Mail was not sent along the most direct route but through what has been called "nodal points"[69] or gatekeepers in correspondence networks.

The main purpose of this study is to provide an examination of the role of Peiresc as a gatekeeper and patron in the development and dissemination of scientific initiatives in seventeenth-century France. Peiresc's

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[67]See René Pillorget, Les mouvements insurrectionnels de Provence entre 1596 et 1715 (Paris: Editions A. Pedone, 1975), 136 n. 473; and Peiresc to the Brothers Dupuy, 4 July 1632, PL 2: 308.

[68]E. Rodocanachi, "Les courriers pontificaux du quatorzième au dix-septième siècle," Revue d'histoire diplomatique 26 (1912): 426.

[69]Sarah S. Gibson, "Scientific Societies and Exchange: A Facet of the History of Scientific Communication," Journal of Library History 17 (1982): 148.

correspondence provides a window to the world of the organizers of early modern science. As a magistrate, he could legitimize scientific activity at a time of oppression. His gatherings in the south of France provide one example of the intellectual activity taking place outside of Paris, in the provinces.

Peiresc's social position enabled him to carry out investigations of natural phenomena when new ideas threatened social and political order. As a gatekeeper with ties in influential European circles, Peiresc had the authority to transmit, adapt, or retain information. He controlled content and direction of information exchanges, hence affecting the formulation of scientific claims.

The promise of patronage and the exchange of gifts were critical in the development and communication of scientific initiatives. Patronage offered scholars financial support; more importantly, it provided a means of self-advancement and legitimation of scientific activity in a time of oppression.[70] Patronage brought recognition to telescopic observations when a new science of empiricism threatened the authority of the Scriptures and Aristotle. Peiresc secured social recognition for his observations by demonstrating the practical applications of science, by

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[70]Mario Biagioli, "Galileo's System of Patronage," History of Science 28 (1990): 12.

citing the names of witnesses, and by communicating results to influential individuals. Without patronage, a mathematician or astronomer could never achieve the status of a philosopher or theologian at a university. The Medici patronage enabled Galileo to leave his position of mathematician at the University of Padua and become a "philosopher" in the court of a prince.[71] As Frank Wigham has pointed out, the prince served as the "original source and final arbiter of reward, but also the source of social place itself."[72] While compliance with requests for information or services brought prestige, refusal to cooperate could result in loss of patronage.

Research Questions

An examination of the use of patronage, communication, and reward systems will provide insight into the process of science and the role of the lesser known organizers of scientific activity prior to the establishment of a state-supported academy. The major question investigated in this study is stated as follows:

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[71]Mario Biagioli, "Galileo the Emblem Maker," Isis 81 (1990): 231-232.

[72]Frank Wigham, Ambition and Privilege, The Social Tropes of Elizabethan Courtesy Theory (Berkeley: University of California Press, 1984), 46.

What was the role of Peiresc in developing and disseminating scientific initiatives through the correspondence networks?

In responding to this question, the following subordinate questions will be examined:

1. What were the responses of natural philosophers to attempts by the church and state to prevent the spread of a new experimental science?
2. What was the extent of scientific censorship in France and did it achieve its intended effect?
3. What types of strategies were devised to dissimulate information and evade censors? What was Peiresc's role in the communication of information?
4. How did Peiresc use patronage to extend correspondence networks and organize scientific activity? How did he obtain compliance for his requests for information and legitimize telescopic observations in the wake of Galileo's sentencing?
5. How did Peiresc and members of the Provençal School secure recognition for their observations in the broader scientific community?

Plan of Study

This study includes seven chapters, a glossary, and appendices containing biographical introductions to Peiresc's friends, documents and letters relating to the

Galileo affair and to astronomical observations. Chapter 1 offers a biographical introduction to Peiresc and an overview of the plan of study. Chapters 2, 3, and 4 provide an examination of the new intellectual gatherings in the private academies, the exchange of information in personal correspondence, and use of censorship to protect a traditional conception of the world. Of specific concern is the role of Peiresc in controlling the exchange of information and in legitimizing scientific investigations through the use of rhetorical strategies and through his social position.

Chapter 2 offers a discussion of the social context of the period, focusing on the private academies and correspondence networks, which provided the setting for intellectual exchanges. Among the more elite gatherings were those of the Brothers Dupuy in Paris and of Peiresc in the south of France, which played an important role in the development and communication of a new experimental science.

The introduction of a scientific method based on observation and inquiry and the publication of a Bible in the vernacular contributed to a questioning of the criterion of certainty, in traditional terms, reason or divine revelation. Faced with the Protestant Reformation and the rise of new intellectual centers outside the university setting, the church implemented censorship to

restore its waning authority and protect the conception of a finite and hierarchical world. As shown by the discussion in Chapter 3, the church implemented censorship to restore the authority of the Scriptures and protect the conception of a finite and hierarchical world. But rivalries between censoring agents and divided loyalties among Catholics[73] resulted in ineffectual efforts to monitor channels of communication.

With the press and book trade regulated by censors, many natural philosophers exchanged information in the private academies and through correspondence networks or relied on rhetorical strategies to publicize views. Others sought the protection of a patron with ties in the church and state. Chapter 4 provides an examination of strategies of evasion used by Peiresc and his contemporaries to communicate new ideas.

Chapters 5 and 6 offer an investigation of Peiresc's use of patronage to develop and disseminate astronomical observations. A system of rewards and gift-giving provided an effective means of soliciting information and achieving cooperation in organizing celestial observation stations. These chapters also provide an examination of Peiresc's use of rhetorical strategies to legitimize telescopic

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[73]The Catholic Church was divided between Ultramontanes, who were loyal to the pope, and the Gallicans, primarily the magistrates of Parlement, who supported the French king.

observations at a time when the Copernican propositions were condemned by the Roman Catholic Church. The exchange of scientific information along correspondence networks, the establishment of an acceptable rhetorical format for scientific claims,[74] and the interaction of individuals and groups are of specific concern in these chapters.

Chapter 7, the conclusion, provides an assessment of Peiresc's role in the development and communication of astronomical information at a time of censorship. The extension of the correspondence networks and the successful establishment of the Provençal School can be attributed to Peiresc's exacting but generous personality. He provided funding and established a research program, which focused on projects (e.g., selenography, training) that would contribute to a method of determining terrestrial longitude. His death and the absence of a patron and successor brought an effective halt to the activities of this group.

Significance

The use of correspondence as a primary source reflects a shift in interest from the "context of justification" to

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[74]Christian Gregory, Personal Communication, Gainesville, FL, fall 1991.

the "context of discovery"[75]--from the final published product of science to the ongoing process of communication, conflict, cooperation, and innovation. Correspondence is the key; it reveals the interaction of individuals and groups and the broader social, political, and cultural underpinnings of the Scientific Revolution.

Through correspondence, the historian can trace an idea from its inception to its publication, or in the case of Galileo's Dialogue, to its condemnation. Peiresc's letters provide a case study for his work on determining a method of terrestrial longitude and reveal the process of scientific innovation.[76] From the time he procured a telescope and made his first observations to the coordination of observations stations throughout Europe and the Levant, Peiresc systematically recorded and transmitted his work in astronomy.

As one of the more prolific correspondents of the early seventeenth century, Peiresc established contacts with hundreds of individuals, often for the purpose of acquiring specific information. A study of his correspondence networks, role of a gatekeeper, and use of

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[75]"Context of discovery" and "context of justification" are terms attributed to the philosopher Hans Reichenbach. Ian Hacking, Representing and Intervening: Introductory Topics in the Philosophy of Natural Science (Cambridge: Cambridge University Press, 1983), 5-6.

[76]Herbert Butterfield, The Origins of Modern Science: 1300-1800, rev. ed. (New York: Free Press, 1965), 9.

patronage offers a means of understanding the importance of communication in scientific innovation. As suggested by the pioneering works of Guillaume Bigourdan,[77] Harcourt Brown,[78] and René Pintard,[79] a thorough study of Peiresc's role in the correspondence networks and private academies is needed to fill the hiatus in scholarship on the organizers of the new science.

Recent scholarship has offered a portrayal of Peiresc as a multifaceted individual--a magistrate in Parlement, a natural philosopher, and as a figure of transition between the Renaissance and a new science. This study provides another interpretation: Peiresc's use of patronage and his role as a gatekeeper in the correspondence networks is considered critical in the development and dissemination of scientific initiatives.

From the perspective of communication research, this study of the exchange of information through correspondence networks will contribute to an understanding of the relationship between the communication and the production

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[77]Guillaume Bigourdan, Histoire de l'astronomie et l'observation et des observatoires en France (Paris: Gauthier-Villars, 1918).

[78]Harcourt Brown, Scientific Organizations in Seventeenth Century France (1934, New York: Russell and Russell, 1967).

[79]René Pintard, Le libertinage érudit dans la première moitié du xviie siècle (Paris: Boivin, 1943; repr. Geneva: Slatkine, 1983).

of scientific knowledge.[80] Correspondence not only provided a rapid and efficient channel of communication, it offered a means of securing recognition and legitimation for claims.

Method

When censorship and oppression determined views expressed in published texts, historian Harcourt Brown has emphasized, "[T]he real substance of the radical ideas of an age has circulated in manuscript, under the cloak."[81] To understand intellectual activity in this period, historians must look beyond printed texts and examine private exchanges in the correspondence networks.

Scope of the Study

This study is defined in terms of spatial, temporal, and thematic parameters. While many of the private academies were located in Paris, Peiresc's gatherings at Aix attest to the intellectual activity in Provence. He was a contemporary of the great thinkers of the period, including Galileo and Descartes, as well as of the organizers of the new science, such as Pierre Gassendi and Marin Mersenne. As a gatekeeper in the correspondence

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[80]Shapin has shown the importance of communication in securing assent for claims about nature. Steven Shapin, "Pump and Circumstance: Robert Boyle's Literary Technology," Social Studies of Science 14 (1984): 481.

[81]Brown, Scientific Organizations, xiv.

networks, he served as liaison between scholars in France and Italy. His contacts with priests in the Levant enabled him to organize telescopic observation stations. His exchanges with hundreds of individuals facilitated the acquisition of artifacts and information that he used to enhance his personal prestige.

While secondary sources served to identify significant periods in Peiresc's life, primary sources convey a diversity of information that is often qualitatively different from publicized views--daily routines, hopes and frustrations, cooperation and rivalry.[82] Content of letters ranged from astronomical investigations to the curative properties of melons, or the "scandal" caused by the bordello of the Bishop of Riez.[83] Correspondence reveals subtleties of language--rhetorical strategies to dissimulate and legitimize scientific endeavors, and the use of persuasion and manipulation to secure compliance for requests.

One challenge presented by this study was to link the activities of the scientific subculture with the broader social context. An examination of the role of the patron

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[82]René Taton, "Le rôle des correspondances scientifiques dans la diffusion de la science aux xvii et xviii siècles," Proceedings of the International Congress on the History of Sciences (Tokyo: Science Council of Japan, 1974): 221.

[83]Peiresc to Valavez [Palamède], 26 July 1626, PL 6: 588.

and gatekeeper provides a means of understanding how scientific initiatives were carried out in the private academies were legitimized and disseminated to the broader reading community. Patronage is a system of relationships between patrons and clients, often arranged by an intermediary,[84] in which social status and legitimacy can be traded for services or information.[85] Peiresc used patronage to develop communication networks and secure cooperation for his requests. As his authority was grounded in the established institutions of the church and crown, he could legitimize scientific activities. Furthermore, portraying Peiresc as a gatekeeper in communication networks offers a means of understanding his role in processing, disseminating, and adapting information to individuals and groups.

To understand the scientific community of the Provençal School, shared values, beliefs, and commitments are explored. Communication reveals controversies and rivalries, and offers a means of accessing beliefs. The subtleties of language and the adaptation of style and content to the recipient further contribute to the understanding of group dynamics.

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[84]Biagioli, "Patronage," 3-4.

[85]Barnes and Edge, 16.

Sources

Primary sources. The published correspondence of Peiresc[86] covers a period of nearly 40 years. Smaller collections of related correspondence are edited by Raymond Lebègue,[87] Bernard Rochot,[88] Phillip Wolfe,[89] and Apollinaire de Valence.[90] The major volumes of published correspondence edited by Tamizey de Larroque are incomplete and unorganized. The Mersenne correspondence[91] is annotated and indexed, providing a baseline for scientific activity of this period. These collections of published letters have provided the basis for this study.

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[86]Philippe Tamizey de Larroque, ed., Lettres de Peiresc 7 vols. (Paris: Imprimerie Nationale, 1893).

[87]Raymond Lebègue, Peiresc à divers (Paris: CNRS, 1985); Lebègue, Peiresc: Lettres à Malherbe (1606-1628) (Paris: CNRS, 1976).

[88]These exchanges between Gassendi and Luillier provide insight into Peiresc's personality. Bernard Rochot, Lettres familières à Francois Luillier pendant l'hiver 1632-1633 (Paris: J. Vrin, 1944).

[89]Phillip Wolfe, ed., Peiresc: Lettres à Naudé (Seattle: Papers on French Seventeenth Century Literature, 1983).

[90]Le Père Apollinaire de Valence, ed., Correspondance de Peiresc avec plusieurs missionaires et religieux de l'ordre des capuchins, 1631-1637 (Paris: Alphonse Picard, 1891).

[91]Paul Tannery, Cornelis de Waard, and Armand Beaulieu, eds. Correspondance du Père Mersenne, 16 vols. (Paris: Beauchesne et fils, 1932).

Secondary sources. Biographies by Georges Cahen-Salvador and Pierre Humbert offer a general introduction to Peiresc's diverse interests, scientific investigations, and ties with intellectual circles. Several edited editions[92] of articles on Peiresc, such as the Fioretti and Peiresc ou la passion de connaître, provide well-researched examinations of Peiresc's scientific activity and ties in the church and crown.

The more significant studies remain those by Harcourt Brown[93] and Seymour L. Chapin.[94] In his Scientific Organizations, Brown has identified critical issues: the scientific and intellectual activity taking place in the French provinces and the role of Peiresc in the correspondence networks, as an intermediary between scholars in France and Italy, and as a close friend of the

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[92]These editions include: Jacques Ferrier, ed., Les fioretti du quadricentenaire de Fabri de Peiresc (Avignon: Academie du Var, 1988); Anne Reinbold, ed., Peiresc ou la passion de connaître (Paris: J. Vrin, 1990); Henri Dubled, Jean Bernhardt, Pierre Costabel, and Agnès Bresson, eds., Nicolas-Claude Fabri de Peiresc (1580-1637), humaniste et savant, sa famille et ses amis (Carpentras: Musée Comtadin, 1981).

[93]Harcourt Brown, Scientific Organizations in Seventeenth Century France, New York: Russell and Russell, 1934; and "Peiresc," Dictionary of Scientific Biography, v. 10, 1973: 488-492.

[94]Seymour L. Chapin, "The Astronomical Activities of Nicolas Claude Fabri de Peiresc," Isis 48 (1957): 13-29.

Brothers Dupuy. Brown also has portrayed Peiresc as a patron and organizer of the new science, and as an amateur and a "proto-scientist."

Chapin introduced Peiresc's astronomical activities, described participants of the Provençal School in terms of competence and involvement, and assessed Peiresc's role in the development of early modern astronomy. Chapin has suggested that Peiresc's utilitarian concerns were among the factors motivating his work in a method of determining terrestrial longitude.

Astronomical sources. Pingré[95] has identified participants observing celestial phenomena in the seventeenth century. Guillaume Bigourdan[96] and Pierre Humbert have indicated the level of involvement and competence of many individuals assisting Peiresc. Humbert has written numerous articles on lesser known astronomers, on instrumentation and procedure, and on published instructions sent by Peiresc to the missionary priests.[97]

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[95]Alexandre-Gui Pingré, Annales celestes du dix-septième siècle, ed. Guillaume Bigourdan (Paris: Gauthier-Villars, 1901).

[96]Guillaume Bigourdan, Histoire de l'astronomie d'observation et des observatoires en France (Paris: Gauthier-Villars, 1918).

[97]Pierre Humbert, "Les astronomes français de 1610 à 1667," Bulletin de la Société d'études scientifiques et archéologiques de Draguignan 44 (1942-1943): 5-72; and L'oeuvre astronomique de Gassendi (Paris: Hermann, 1936).

Limitations. The primary sources used in this study are the published letters of Peiresc and Mersenne. The editing of the Peiresc correspondence and expurgation of passages judged "too scientific"[98] by Philippe Tamizey de Larroque, editor of the Peiresc correspondence, have limited the conclusions that can be drawn, particularly concerning the competence and involvement of members of the Provençal School.

Attempts to understand Peiresc as a communicator and organizer of scientific activity is biased somewhat by what Pintard has described as the "role of conjecture."[99] Peiresc and Gassendi did not explicitly address assumptions or beliefs. They did not express their support of the Copernican system.[100] At other times, they dissimulated views. Often what is not said is as revealing as what is said.[101] Hence, this study offers one interpretation of the role of Peiresc in patronizing and communicating scientific activity.

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[98]Pierre Humbert, L'oeuvre astronomique de Gassendi (Paris: Hermann, 1936), 7 n. 1.

[99]Pintard, ix-x.

[100]Gassendi described his conception of the Copernican system in a letter to Peiresc. Gassendi to Peiresc, 26 Feb 1632, PL 4: 259; he wrote that he was pleased Boulliau was a Copernican, Gassendi to Boulliau, 24 Jan 1634, MC 4: 11.

[101]Taton, 218.

Summary

From an early age, Peiresc displayed an interest in natural philosophy, taking advantage of opportunities to explore nature and solicit information from friends. Contacts with diverse scholars, earlier cultivated by Pinelli, provided the foundation for Peiresc's personal correspondence networks. The promise of patronage and gifts enabled him to secure information and cooperation in investigations of natural phenomena; social position and family wealth allowed him to establish and maintain ties with influential circles. In the following chapters, an examination of Peiresc's interactions with individuals and groups provides a means of understanding the role of patronage and communication in legitimizing scientific activity, securing information, and developing scientific initiatives in early seventeenth-century France.

CHAPTER 2
SOCIAL CONTEXT

Peiresc's gatherings at Belgentier have been described as "the retreat and rendezvous of all men of talent"[1] where the conversations were "carefree."[2] This academy in Provence was just one of many of the scholarly circles in France. Private academies were held in the house of a patron, an individual whose official position afforded sufficient income to provide a library and instruments as well as protection from censors. Members of the private academies gathered on a regular basis to share books, literary news, results of scientific inquiries, or letters from correspondents. Travel accounts,[3] dissections,[4] a conjunction of planets,[5] or the care of Angora cats[6] were valid subjects of inquiry in the academies and

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[1]Jean-Jacques Bouchard, Les confessions de Jean-Jacques Bouchard suivies de son voyage de Paris à Rome (Paris: Isidore Lixeux, 1881), 128.

[2]Bouchard, Voyage, 131.

[3]Peiresc to the Brothers Dupuy, 13 July 1633, PL 2: 556; Gassendi to Peiresc, n.d. May 1635, PL 4: 483.

[4]Peiresc to Jacques Dupuy, 25 July 1634, MC 4: 251; Gassendi to Diodati, 29 July 1634, MC 4: 339.

[5]Peiresc to Paolo Gualdo (a friend of Galileo's), 20 Feb 1605, quoted in Pierre Humbert, Un amateur: Peiresc (1580-1637) (Paris: Desclée de Brouwer et cie., 1933), 77.

[6]Peiresc to Guillemin, 15 Sept 1610, PL 5: 1.

correspondence. Discussions were not confined within these academies, but were transmitted through correspondence networks to be shared with members of other scholarly gatherings.

Background

The sixteenth- and seventeenth-century French universities promoted a traditional world-view based on the Scriptures and texts of Aristotle. Medieval Christianity appropriated a number of Aristotelian and Platonic concepts. The hierarchy of being, the cosmic division between the sublunar and supra-lunar regions, the perfect spheres moving with uniform motion coupled with the Aristotelian Prime Mover supported the conception of a world moved and sustained by God. Hence, the introduction of a new ordering of the world had implications for the organization of society or at least a church-informed society.

The rhetoric of the new science emphasized empiricism as opposed to the traditional reading of the Scriptures and Aristotle. Galileo's telescopic observations of the moon, an obvious example, revealed that earth's nearest neighbor was not a perfect celestial globe but marked with mountains and craters. The discovery of sunspots also provided evidence refuting the Platonic conception of immutable heavenly bodies and the Aristotelian distinction between the sublunar and supra-lunar realms.

The emerging world-view also had implications for the scholastic or pedagogical framework. The medieval university maintained a hierarchy among academic disciplines which recognized theology as the only science that could yield truth and certainty whereas astronomy and mathematics could only provide information about the world of appearances or as perceived by the senses.[7] The Ptolemaic system of equants and epicycles was not considered a reality, but rather a means of "saving appearances" or explaining planetary movements. Beginning with Copernicus (On Revolutions, 1543)[8] and Galileo, many of the new astronomers presented what they considered real systems rather than hypothetical schemes. Copernicus and Galileo explained what appeared to be anomalies under the Ptolemaic system--retrograde motion and the variation in the brightness of Venus. But they were reluctant to publicize their views from fear of ridicule by colleagues and later from fear of censors.[9]

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[7]Edward Grant, Physical Science in the Middle Ages (Cambridge: Cambridge University Press, 1977), 33.

[8]Copernicus's conception of a heliocentric world was not revolutionary in itself. Aristarchus of Samos had developed a similar system in the third century B.C. But, Copernicus presented his theory in terms of a real rather than a hypothetical system.

[9]Galileo to Kepler, 4 Aug 1597, quoted in René Taton, "Le rôle des correspondances scientifiques dans la diffusion de la science aux xviie et xviiie siècles," Proceedings of the 14th International Congress on the History of Sciences (Tokyo: Science Council of Japan, 1975), 217.

Peiresc's position in the church and Parlement assured favored protection from censors and enabled him to legitimize his scientific initiatives. He followed in the Scriptural and Baconian tradition, justifying the observations of nature as a means of knowing God through his works;[10] as Galileo claimed, God is revealed in two "books," the Holy Scriptures and the "Book of Nature." Peiresc demonstrated that observational astronomy had practical applications--the determination of terrestrial longitude[11] and the reform of the church calendar. Accurate tables of planetary movements would enable a more precise dating of the vernal equinox and hence religious feast days, such as Easter. These practical applications provided a means of securing the cooperation of missionary priests in observations.

The origins of investigations of nature in the seventeenth-century private academies can be traced to the earlier Italian gatherings of Girolamo Ruscelli (Accademia Segreta) and Giambattista della Porta (Accademia Secretorum Naturae),[12] which legitimized observation and inquiry by

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[10]Robert K. Merton, "Puritanism, Pietism, and Science," The Sociological Review 28 (1936): 1, 7.

[11]Peiresc to Menestrier, 22 Feb 1629, PL 5: 559.

[12]William Eamon and Françoise Paheau, "The Accademia Segreta of Girolamo Ruscelli, A Sixteenth-Century Italian Scientific Society," Isis 75 (1984): 339-340.

proclaiming that "the most majestic wonders of nature are not to be concealed, that in them we may admire the mighty power of God, His wisdom, His bounty, and therein reverence and adore Him."[13] Della Porta maintained that the study of nature would "remove all blindness and malice, which are wont to dazzle the sight of the mind and hinder the truth."[14] Investigations of nature secured increasing social recognition as they contributed to material progress and knowledge of God through His works.

French Academies

Private academies, headed by a powerful patron, offered a forum for discussing new ideas.[15] Membership was determined by social standing, with the exception of the conferences at the Bureau d'adresse, which admitted the general public. These early scientific academies developed

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[13]Giambattista della Porta, Preface, Natural Magic, ed. Derek J. Price (New York: Basic Books, 1957), n. pag.

[14]Della Porta, "Preface," n. pag.

[15]Pintard has described the bourgeoisie as the "infantry of science." While Peiresc had a noble heritage, the families of Gassendi and Mersenne were farmers; Boulliau's father was a notary and Naudé's a bailiff. René Pintard, Le libertinage érudit dans la première moitié du xvii siècle (Paris: Boivin, 1943; repr. Geneva: Slatkine, 1983), 78.

a protocol of scientific investigation involving empiricism, cooperation, and communication.[16]

Origins and Development

The Italian antecedents of the French societies established a private, patron-supported tradition. The Accademia Secretorum Naturae (Naples) and the Accademia Segreta popularized the "secrets" tradition[17] of alchemists among its members.[18] The Accademia dei Lincei (1603-1630, Rome),[19] led by Prince Federico Cesi, introduced experimentation and largely discredited the Aristotelian underpinnings of astronomy. While these academies maintained secrecy in proceedings, they often communicated their observations to other scientific groups and the

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[16]Sarah S. Huckaby, "The Accademia dei Lincei: A Study in 17th Century Scientific Communication," Fifth Library History Seminar (Tallahassee, FL: Florida State University Press, 1972), 171.

[17]Movable type had a role in transforming the esoteric or secrets tradition into public knowledge. The secrets tradition refers to certain practices--often recipes and formulas--whereby individuals could understand the mysteries or secrets of nature. William Eamon, "From the Secrets of Nature to Public Knowledge," Reappraisals of the Scientific Revolution, ed. David Lindberg and Robert Westman (Cambridge: Cambridge University Press, 1990), 340-345.

[18]Eamon and Paheau, 339-340.

[19]Galileo was a member of this academy.

public through correspondence and publications.[20] In Paris, gatherings at the study of the President of the Parlement of Paris, François Auguste de Thou I, shifted emphasis from philology to natural philosophy under the direction of his nephews, Pierre and Jacques Dupuy.[21] In the south of France, traveling scholars and missionary priests visited Peiresc, often receiving instruction in scientific endeavors before leaving for Italy and the Levant.

Private Academies

Gassendi valued exchanges in private academies, writing that the "true philosophy is found in refuge under the roof of some individuals who practice it in the shadow and in the silence."[22] The freedom they enjoyed was not sanctioned by religious or political institutions, rather it was a personal freedom--the freedom to express one's opinion without fear of reprisals. One individual told the

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[20]The Lincei sponsored the publication of Galileo's Letters on Sunspots in 1613, his Assayer in 1623 on the controversy over the comets, and other works on botany, bees, and musical harmony. Huckaby, 171-181.

[21]Harcourt Brown, Scientific Organizations in Seventeenth Century France (New York: Russell and Russell, 1934), 10.

[22]Gassendi to Reneri, Oeuvres complètes, 6 vols. (Lyon: n.p., 1658), 4: 30, quoted in Isaac Uri, Un cercle savant au xviie siècle: François Guyet (1575-1655) (Paris: Hachette, 1886), 29.

Dupuys that "had I lost the honor of your good graces for having a differing opinion . . . the freedom of the Cabinet[23] [Dupuy] would have suffered."[24]

A cabinet has been defined as a private room which contained books and objects, a place in which to retire and pursue scholarly endeavors.[25] It contained books, instruments, and artifacts, as well as a variety of curiosities. Unique and bizarre collections impressed friends or attracted visitors. The cabinets of curiosities, once condemned by the church due to their association with the occult or hidden qualities of nature,[26] were recognized at this time as representing knowledge and learning,[27] and as attesting to the prestige

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[23]The term cabinet has been used in several ways in this study. It can refer to an academy (e.g., Cabinet Dupuy), to a room in which discussions are held, or to a place where curiosities are displayed.

[24]La Hoguette to the Brothers Dupuy, 16 May 1649, Lettres de Ph. Fortin de la Hoguette à J. Dupuy (1644-1649), quoted in Pintard, 97.

[25]Bernard Beugnot, "L'ermitage parmi les livres," Revue française d'histoire du livre 24 (1979): 688.

[26]Krzysztof Pomian, Collectors and Curiosities, Paris and Venice, 1500-1800, trans. Elizabeth Wiles-Portier (Cambridge: Polity Press, 1990), 59.

[27]William Eamon, "From the Secrets of Nature to Public Knowledge: the Origins of the Concept of Openness in Science," Minerva 23 (1985): 332.

of patrons.[28] Some cabinets were open to visitors and served to popularize the study of natural phenomena. As Peiresc stressed to one correspondent in Rome, visitors interrupted a natural philosopher in his work:

> You did not tell me that you have set up now such a beautiful cabinet and have enriched it with such rarities, that you need to be chained to stop from receiving the gallant men who can visit you daily, . . . a diversion capable of consuming much time.[29]

Membership in the private academies was limited to an elite group of intellectuals. Family wealth and social status did not ensure entry to these gatherings. Some individuals, such as the wealthy but dull magistrate Habert de Montmor, were excluded from the Cabinet Dupuy.[30]

Traveling scholars and visitors needed letters of recommendation to be admitted. These letters addressed the merits of the individual, official position, and family ties. Peiresc said Arcos was "a friend of extraordinary merit."[31] Describing Gassendi as skilled in philosophy and mathematics, Peiresc asked that his friend be admitted to the Cabinet Dupuy. He made excuses for his lack of

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[28]Giuseppe Olmi, "Science-Honour-Metaphor: Italian Cabinets of the Sixteenth and Seventeenth Centuries," The Origins of Museums: The Cabinet of Curiosities in Sixteenth- and Seventeenth-Century Europe, ed. Oliver Impey and Arthur MacGregor (Oxford: Clarendon Press, 1987), 8.

[29]Peiresc to Menestrier, 25 Aug 1631, PL 5: 590.

[30]Uri, 17.

[31]Peiresc to Brothers Dupuy, 22 Nov 1632, PL 2: 376.

friendship with influential circles. "This country, removed from the trade of books and visits of distinguished individuals as typical of your region, cannot produce individuals having circles of cultivated friends as found there [Paris]," Peiresc explained. "But I still hope that you will find pleasure in his modest and gentle conversation."[32]

The more noteworthy gatherings in the early seventeenth century were held by the Brothers Dupuy (ca. 1616) in Paris and by Peiresc (ca. 1607) in Aix-en-Provence. The library of the Cabinet Dupuy on the Rue des Poitevins, near the Boulevard St. Michel, contained 16,000 books and manuscripts.[33] Peiresc described the cabinet as the "true domicile of virtue[34] and the rendezvous of all lettered men of the nation and abroad."[35] As many as 50 individuals met daily in the late afternoons at the Cabinet Dupuy to exchange news of foreign governments, publications, and scientific activities,[36] or to carry on

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[32]See Peiresc to Brothers Dupuy, 21 April 1628, PL 1: 593-594.

[33]Uri, 11.

[34]Virtue referred to the "giving of favor and reward." Linda Levy Peck, Court Patronage and Corruption in Early Stuart England (Boston: Unwin Hyman, 1990), 13.

[35]Peiresc to the Brothers Dupuy, 12 May 1628, PL 1: 607.

[36]Brown, Scientific Organizations, 14.

"useful and agreeable" discussions.[37] Libertines François Luillier, Gabriel Naudé, and Jean-Jacques Bouchard attended, as did the Jesuit confessor Jacques Sirmond and the physician Guy Patin. Also there were astronomers and mathematicians, including the priest Marin Mersenne and the cleric astronomers Pierre Gassendi and Ismaël Boulliau.[38]

There were other scientific circles in Paris. Mathematicians and astronomers, such as Claude Mydorge, Ismaël Boulliau, René Descartes, and Gassendi attended Mersenne's circle (1635-1648), which he described as "the noblest of all academies in the world, dedicated to mathematics."[39]

Peiresc modeled his academy on the Cabinet Dupuy, which he attended while in Paris from 1616-1623.[40] The proximity of Aix to the ports of the Mediterranean Sea made his cabinet a convenient stopping place for scholars traveling between Europe and the Levant. Missionary priests stopped here for training in telescopic observations. Among the visitors were ambassadors, agents to the king, adventurers., and traveling scholars. Gassendi noted that Peiresc often "spent his time in the

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[37]Uri, 16.

[38]Pintard, 93-94.

[39]Letter of 1635, Pintard, 91.

[40]Brown, Scientific Organizations, 8.

company of such men, interposing frequent reading, and the cultivation of rare plants . . . [and on occasion] detained [visitors] as long as he could."[41]

Peiresc's gatherings also attracted a local population; the Chief Justice of the Parlement of Provence Guillaume Du Vair attended, as did the Hellenic scholar François de Villeneuve and the poet François de Malherbe.[42] Villeneuve later participated in Peiresc's astronomical observations; Malherbe served as a liaison to the crown upon taking a position with the royal entourage in Paris. Among the regular members of these meetings were Gassendi and Joseph Gaultier de la Valette, a cleric and an experienced astronomer. The priest Pierre Antelme of Fréjus and Tonduti de St. Légier may have also attended.

There were other scientific gatherings in the French provinces, indicative of intellectual activity taking place at this time.[43] François-Gilles Macé, professor of mathematics and medicine at the University of Caen, led discussions and made astronomical observations.[44] His

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[41]Pierre Gassendi, Book 4, The Mirrour of True Nobility and Gentility, trans. William Rand (London: J. Streater, 1657), 41-42.

[42]Humbert, Amateur, 50.

[43]Brown, Scientific Organizations, 215.

[44]In 1618, Isaac Beeckman, the Dutch scholar and friend of Descartes, came to Caen to study medicine. At that time, Macé showed him a telescope. H. Prentout, "François-Gilles Macé: Un professeur de mathématiques à l'Université de Caen au commencement du xvii siècle," Mémoires de l'Académie Nationale des Sciences de Caen,

academy at Caen, carried on by his nephew Pierre-Daniel Huet, became one of the centers of experimentation in the country.[45] Scientific groups, often associated with Jesuit schools, emerged in other provincial cities, including Tournon and Avignon in the south of France.[46]

Conferences at the Bureau d'adresse

The Bureau d'adresse was a combination pawn shop, printing press, employment office, medical dispens, and public academy. The weekly conferences of Théophraste Renaudot[47] at the Bureau d'adresse were held on Monday afternoons from 1629 to 1642.[48] According to Renaudot, these conferences functioned to "rescue the liberal sciences from the bondage of scholastic obscurities [e.g., university teaching], and to render things intelligible without obliging the studious to the unpleasing and

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(1911): 4-6.

[45]Brown, Scientific Organizations, 216.

[46]François de Dainville, "Foyers de culture scientifiques dans la France meditérranénne du xvie au xviiie siècle," Revue d'histoire des sciences et de leurs applications 1 (1947-1948): 289-300.

[47]Cardinal Richelieu was the patron of Renaudot.

[48]The conferences were held on Monday afternoons from August 1633 through August 1642.

perpetual task of first surmounting the difficulties of exotic words."[49]

Renaudot, who communicated and popularized a new experimental science to the public, was probably more interested in promoting a personal agenda than in educating public. He used various channels of communication to publicize information--a medical clinic, conferences and demonstrations, a newspaper, and published proceedings of meetings. He opened a medical dispensary to treat indigents--a move contested by the Faculty of Medicine, notably by Guy Patin.[50] Furthermore, he promoted chemical treatment of disease, a practice condemned by physicians, who relied on the traditional methods of purges and bleeding.[51]

Renaudot's scientific conferences reflected discussions carried out in the private academies and letters.[52] While his Gazette (ca. 1631) contained mainly

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[49]Eusebe Renaudot, ed., Preface, General Collection of Discourses of the Virtuosi of France, trans. G. Havers (London: printed for Thomas Dring and John Starkey, 1664), n. pag.

[50]Howard Solomon, Public Welfare, Science, and Propaganda in Seventeenth-Century France: The Innovations of Théophraste Renaudot (Princeton, NJ: Princeton University Press, 1972), 46-47, 170.

[51]Solomon, 171.

[52]For example, the subject of echoes, described in exchanges with Mersenne, was also discussed in a conference in November 1633. Villiers to Mersenne, mid-November, 1633, MC 3: 546 n. 1. Conference on the movement of the earth and a theory of the tides took place within six months of the condemnation of Galileo's Dialogue Concerning

news of foreign countries and the French crown, his published proceedings of his conferences at the Bureau d'adresse included a range of topics: natural magic, truth and certainty, love and vengeance, and movement of the earth. Two subjects were excluded from discussion:

> "Not only is slander banished, but for fear of irritating minds easily upset by problems of religion, all such concerns are referred to the Sorbonne. The mystery of affairs of State, the nature of divine things, of which those who have the most to say, say the least, we refer them to the Council [du Roi] from where they proceed. All the rest are here, to give free play to your imagination."[53]

Renaudot carefully avoided topics that could lead to censorship by theologians of the Sorbonne or conflict with the crown. Hence, through public conferences Renaudot extended communication of scientific initiatives from an elite community to a general audience.

His popularization of scientific activities through public conferences earned him little respect from the scientific community, which scorned this "wretched printer . . . boastful of wares with which he degrades himself by the price of profaning and divulging his conferences to lowly people."[54] These criticisms arose primarily from Renaudot's inaccuracy in reporting and his inclination to

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the Two Chief World Systems in 1633. MC 3: 602 n. 2; Renaudot, 10: 57, 19: 115.

[53]Preface Première centurie, quoted in Solomon, 64-65.

[54]Peiresc to Brothers Dupuy, 15 Jan 1634, PL 3: 15.

divulge information that could lead to the persecution of natural philosophers. The lack of respect shown by the scientific community toward the gazeteer also stemmed from Renaudot's ties with Cardinal Richelieu, who resented the power and prestige of private academies.[55]

The published proceedings of these conferences were presented in the form of anonymous dialogues. The absence of the speaker's name enabled the reader to evaluate the material on the basis of content rather than the social status of the author--so Renaudot said.

Patronage and Science

Patrons of private academies not only provided funding and protection for scientific investigations, but rewarded productive clients with social status and prestige. Furthermore, patrons could legitimize scientific activity as their own authority was rooted in institutions of the church and crown. For a private academy to succeed, it needed a patron with a sense of responsibility and the ability to manipulate and persuade friends, a well-defined

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[55]Some of the antagonism between members of the private academies and the cardinal could be attributed to the corruption in the entourage of Richelieu and Marie de Medici (1573-1642), mother of Louis XIII. Jules-Marie Priou, "Magistrat et citoyen français," Les fioretti du quadricentenaire de Fabri de Peiresc, ed. Jacques Ferrier (Avignon: Académie du Var, 1988), 90.

research program, and funding.[56] An academy also needed a communication system through which to distribute recognition and disseminate results.[57]

Peiresc's ties with influential circles, his erudition, and his family wealth contributed to the successful establishment of an academy in Aix-en-Provence, which became known as the Provençal School. Peiresc used patronage to solicit scientific information from correspondents and organize telescopic observations. He used personal, political, and clerical ties to secure cooperation for telescopic observations at the time of Galileo's sentence.

Patronage was not free but imposed obligations such as the need to respect protocol and to reciprocate. Correspondents responded to Peiresc's requests for information or risked the loss of patronage. To understand how scientific activity developed in the private gatherings, this section provides an examination of Peiresc's academy in terms of the following aspects: the use of patronage to develop and legitimize scientific activity, the popularization of scientific activity through

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[56]Harcourt Brown, "L'Académie de physique de Caen (1666-1675)," Extrait des mémoires de l'Academie des sciences, arts et belles-lettres de Caen 10 (1938): 80-84.

[57]Barry Barnes and David Edge, eds., "The Organization of Academic Science: Communication and Control," Science in Context: Readings in the Sociology of Science (Cambridge, MA: The MIT Press, 1982), 15.

a cabinet of curiosities, the establishment of a protocol of communication and cooperation, and the development of a research program at the Provençal School.

Peiresc's Use of Patronage

Known as a patron of scholars, Peiresc offered lodging and the use of his libraries; he financed publications and arranged patronage positions for clients. Peiresc not only provided protection and financial support, but legitimized scientific activity and conferred social status on individuals.[58] Peiresc informed one priest that telescopic observations would "not be injurious to your pious and charitable conquest of souls. On the contrary, this could one day serve as bait to attract others gradually to follow your example."[59] The treasurer of France, François Luillier, wrote that Peiresc "facilitated observations, and all those who love sciences are immeasurably obligated [to him]."[60] Often missionary priests stopped in Aix for instructions in telescopic observations before traveling to the Levant. On his return from Egypt, the priest Théophile Minuiti brought two mummies, one of which contained an ancient papyrus book inscribed with hieroglyphics that

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[58]Mario Biagioli, "Galileo's System of Patronage," History of Science 28 (1990): 4-5.

[59]Peiresc to Colombin de Nantes, 1 Aug 1634, PV 82.

[60]Luillier to Peiresc, 1 June 1634, PC 2: 276.

Peiresc estimated to be 2000 years old.[61] Cardinal Francisco Barberini and his entourage visited Peiresc in October 1625.[62] Although Peiresc was making funeral arrangements for his deceased father at that time, he invited the cardinal to visit his cabinet and offered him a treasured book as a gift--a book Peiresc had just received from the Brothers Dupuy. As Peiresc explained, the cardinal's "unexpected visit did not leave us the means of presenting him with something else. I am sure you will not take this badly."[63]

Peiresc financed the first scientific expedition for telescopic observations in 1611 and made plans for a second in 1636. He supported Gassendi's scholarship in atomism and Mersenne's work in musical harmony.[64] He offered to help Thomas Arcos during his imprisonment in Tunisia.[65]

The successful arrangement of patronage positions in elite circles attested to Peiresc's personal influence and prestige. Naudé sought improved status and asked Peiresc

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[61]Peiresc to the Brothers Dupuy, 8 Aug 1632, PL 2: 327.

[62]Peiresc to Valavez [Palamède], 29 Oct 1625, PL 6: 297-299.

[63]Peiresc to the Brothers Dupuy, 20 April 1625, PL 1: 59.

[64]Mersenne to Peiresc, 20 March 1634, PC 2: 502. Peiresc to Mersenne, 8 July 1634, MC 4: 236.

[65]Peiresc to Arcos, 13 July 1630, PL 7: 85.

for a letter of recommendation, similar to that which "succeeded for Monsieur Bouchard, who now has a place in the [Vatican] palace."[66] Naudé wrote Peiresc:

> It seems to me that you can legitimately demonstrate to His Holiness [Cardinal Bagni] that for nearly four years I have been in Rome and have put my hopes in his kindness and generosity . . . [and have not obtained a position which] could ease my great expenses to maintain myself outside my own country and that if he does not choose to reward me with something, it is almost impossible to remain in Rome serving the cardinal honorably.[67]

As a powerful patron, Peiresc could offer gifts or social status as inducement to work harder. After his bookbinder, Simon Corberan, showed skill in astronomical observations, Peiresc sent him to observe the lunar eclipse of August 1635 from nearby Mount St. Victoire. The successful accomplishment of this task could have enabled Corberan to achieve prestige among elite astronomers of the Provençal gatherings. But Corberan failed to carry out the observations--he fell asleep--and hence, lost prestige and the possibility for advancement.

Maintaining patronage relationships required a continual exchange of services. At times, Peiresc overwhelmed clients with requests for information--copying inscriptions in churches, delivering Angora cats and orange flower water, or visiting cabinets of collectors. Peiresc

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[66]Naudé to Peiresc, 20 July 1631, NP 143.

[67]Naudé to Peiresc, 20 July 1634, PC 2: 37.

also sought to control behavior through praise and rebuke.[68] Manners and civility were signs of honnêteté--"refined, proper social behavior"[69]--and reflected on the prestige and image of the patron. He criticized Prior Denis Guillemin's affectations of speech. "[U]nderstand that plain speech is worth thirty times more than a flowery style," he advised.[70] The need for concise writing reflected the concern for "functional" reporting of scientific activities, more highly valued than the elaborate style which could enhance personal prestige.[71] In his own letters, Peiresc has been described as using "no phrases which were luxuriant or undigested. For he always expressed what he intended with common words yet not without elegance and civility."[72]

He scolded Mersenne for neglecting protocol--omitting titles in letters and forgetting the names of superiors in his correspondence, and confusing dates.[73] Peiresc

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[68]Peiresc to Guillemin, 17 Dec 1624, PL 5: 40.

[69]Jacques Revel, "The Uses of Civility," ed. Roger Chartier A History of Private Life (Cambridge: The Belknap Press, 1989), 3: 90.

[70]Peiresc to Guillemin, 6 Sept 1624, PL 5: 30.

[71]Steven Shapin, "Pump and Circumstance: Robert Boyle's Literary Technology," Social Studies of Science 14 (1984): 495.

[72]Gassendi, Book 1: 14.

[73]Peiresc to Mersenne, 20 Aug 1635, MC 5: 354-356.

believed that this disregard for protocol reflected adversely on the patron. "If you would take the trouble to reread your letters before sealing them . . . you would not have made that error in the date of 15 August when it could have only been the tenth."[74] On another occasion, he pointed to inaccuracies in Mersenne's dedication, "[Y]ou made me a councilor of Dijon which is in Burgundy. One would not pardon such a great mathematician and hence, a geographer, for not knowing if the Parlement of Dijon is in Provence or Burgundy."[75] Mersenne made an attempt to appease Peiresc in his letters. "I did, in fact, forget the name of M. Dormalius, . . . for Dijon, I have already told you that the error of my pen astounded me."[76] These efforts to justify errors, omissions, or a slip of the pen might suggest that Mersenne was more concerned with maintaining Peiresc's patronage than with inaccuracies in his text.

A breach of protocol could result in loss of honor or prestige. When the Dupuys' nephew did not visit Peiresc, he wrote, "I am so outraged and mortified . . . because at

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[74]Peiresc to Mersenne, 20 Aug 1635, MC 5: 356.

[75]Peiresc to Mersenne, 17 July 1635, MC 5: 323.

[76]Mersenne to Peiresc, around 1 Sept 1635, MC 5: 372.

one time he gave me his word, which was a type of binding contract for a lord of his status."[77]

The Cabinet of Peiresc

Peiresc's residences at Aix and Belgentier contained extensive libraries, gardens, and his collections of curiosities. The library held more than 5000 books and 200 manuscripts,[78] which included works by Galileo, Giulio-Cesare Vanini, who was burned at the stake, and Tommaso Campanella, imprisoned by the Spanish Inquisition, as well as ephemerides, treatises from antiquity, ecclesiastical doctrines, and Arabic texts.[79] Not only did Peiresc collect and lend books, but he had them bound with morocco leather and stamped with a motif in gilt.[80]

His gardens at Belgentier were said to be among the more famous in France. Several varieties of jasmine and orange trees bloomed.[81] There were papyrus and coconut plants, ginger from India, and vineyards from the Levant.[82]

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[77]Peiresc to the Brothers Dupuy, 15 Dec 1629, PL 2: 206.

[78]H. Omont, "Les manuscrits et les livres annotés de Fabri de Peiresc," Annales du midi 1 (1889): 317.

[79]Cecilia Rizzi, Peiresc e l'italia (Turin: Giappochelli, 1965), 297-316.

[80]Peiresc to the Brothers Dupuy, 3 Feb 1629, PL 2: 9.

[81]Humbert, Amateur, 167-168.

[82]Gassendi, Book 4, 43-44.

He shared unusual species of plants with the gardeners of the king and pope[83] and wrote of sending the eau de naffe (orange flower water) to friends.[84] Not only did he seek to procure unusual plants, but he experimented with grafting.[85]

Naudé compared Peiresc's cabinet to a "`very frequented marketplace, containing the most precious merchandise . . . no ships enter the ports of France without bringing Peiresc marble statues, manuscripts . . . and antiquities.'"[86] Before the theft of his ancient medals, Peiresc estimated his collection to contain 18,000 pieces.[87] His more precious artifacts were a tripod from Fréjus and a book of hieroglyphics. He kept his scientific instruments--including five telescopes--in Aix. Shelves were lined with books, packets of letters from correspondents,[88] journals of observations,[89] two large

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[83]Gassendi, Book 4, 42.

[84]Humbert, Amateur, 164-165.

[85]Gassendi, Book 4: 45.

[86]Gabriel Naudé, quoted in Uri, 41.

[87]Humbert estimated that at Peiresc's death, there were 18,000 medals which did not include 1,300 lost in a theft of 1623. Humbert, Amateur, 144-145.

[88]Gassendi, Book 6: 197.

[89]Jean Bernhardt, "L'inventaire posthume de la bibliothèque," Peiresc ou la passion de connaître, ed. Anne Reinbold (Paris: J. Vrin, 1990), 14-19.

teeth said to belong to a giant,[90] shells, fossils, and lodestones. From correspondents, Peiresc solicited specific information, which concerned the location of marine fossils in the mountains, the direction of currents and tides off the coast of North Africa,[91] the customs among cannibals,[92] and the eruption of Vesuvius.[93] Of other correspondents, he asked for eye-witness reports on the serpents said to lick the wounds of lepers[94] and on the plum tree reportedly growing in the stomach of a Spaniard.[95] Peiresc meticulously recorded the responses in his journals of observations and communicated information to correspondents. He requested plaster imprints of vases, bas reliefs, and figurines, instructing his correspondents on the procedure of making molds.[96] Possession of rare and unique objects provided a means of improving personal

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[90]Arcos to Aycard, 24 June 1630, quoted in Alexandre-Jules-Antoine Fauris de Saint-Vincens, ed., "Suite des lettres inédites de Peiresc communiquées à M. Millin," Magasin encyclopédique 5 (1806): 116, 121.

[91]Peiresc to Arcos, 17 Oct 1634, PL 7: 142.

[92]Peiresc to Colombin de Nantes, 1 Aug 1634, PV 81.

[93]Peiresc to Bouchard, 14 July 1632, PL 4: 77.

[94]Peiresc to Menestrier, 4 Oct 1635, PL 5: 788.

[95]Peiresc to Naudé, 3 Jan 1636, PN 70; in another letter Peiresc described it as a thorn that had grown roots. Peiresc to the Brothers Dupuy, 18 March 1636, PL 3: 455.

[96]Peiresc to Menestrier, 20 Oct 1633, PL 5: 658.

prestige in the eyes of visitors. Curiosities also served as the currency of exchange in sustaining or initiating patronage relationships.

The walls of the cabinet of Peiresc were hung with portraits of influential friends and representatives of the elite European intellectual circles--individuals Peiresc described as "the most famous men I have known who have given me the honor of their respect . . . who have allowed me to serve as their humble servant."[97] Some of these paintings were acquired as gifts; others were commissioned by Peiresc.[98] These paintings, often measuring two feet by two and a half feet,[99] were displayed in the cabinet. They served to impress friends or visitors by forging an association between influential individuals and this Provençal magistrate.

There was a portrait of the German patron Marc Welser, who published Christopher Scheiner's letters on sunspots and who exchanged news with Galileo. A painting of the Italian savant Pinelli demonstrated ties with European humanists, while those of Cardinal Barberini and his uncle, Pope Urban VIII, implied connections to Rome. The Brothers Dupuy and François Malherbe represented ties with Parisian

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[97]Humbert, Amateur, 135-136.

[98]See Peiresc to Chalette, 8 May 1627, PL 7: 877; Peiresc to Naudé, 3 Jan 1635, PN 33-34.

[99]Peiresc to Chalette, 8 May 1627, PL 7: 877-878.

academies and the royal court. Peiresc also had paintings by well-known artists, including a portrait of Peter Paul Rubens by Anthony Van Dyck.[100] Amidst these portraits was one of Peiresc by a Flemish painter, Louis Finson. The cabinet also contained portraits of ancient figures--the Greek navigator Pytheas by Rubens[101] and two Emperors of the Holy Roman Empire, Charlemagne and Frederick I.[102]

In his cabinet were a variety of living plants and animals, such as the Rose of China from Barberini, said to change colors three times daily.[103] The gazelle named Alzaron, who preferred roaming about the furnished rooms, might have been here.[104] There were cages of chameleons--some of which Peiresc claimed slept with his valet.[105] His letters carried detailed descriptions of their behavior--their ability to change color, which he said the "ancients

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[100]Humbert, Amateur, 134-136.

[101]Peiresc used Pytheas's measurements of the latitude of Marseilles as the basis for his comparison in 1636.

[102]Humbert, Amateur, 136.

[103]Peiresc to the Brothers Dupuy, 26 Dec 1631, PL 2: 289-290.

[104]Peiresc to Arcos, 3 Aug 1634, PL 7: 132.

[105]Humbert, Amateur, 260.

attributed to their timidity,"[106] as well as observations of their sleeping habits and food preferences.[107]

Peiresc was thorough in his investigations and attentive to detail.[108] It may have been from pragmatism or scientific interest, but Peiresc never lost an occasion to learn. He participated in the autopsy of a friend who had a kidney stone said to rotate with the moon. Peiresc likely kept a jar containing the kidney stone in his cabinet. He dissected his chameleons when they died, sending information on the anatomy of the eyes, tongue, and reproductive organs to interested correspondents.[109] He arranged for a prisoner to eat a hearty meal before execution in order to more effectively study the digestive process with Gassendi.[110] He performed an autopsy on his pet dog, Sultana, to determine the cause of death.[111]

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[106]Peiresc to Aycard, 4 Nov 1633, PL 7: 316.

[107]Peiresc to the Brothers Dupuy, 24 Oct 1633, PL 2: 629.

[108]Gassendi to Diodati, 29 Aug 1634, MC 4: 340.

[109]Peiresc to Arcos, 30 May 1636, PL 7: 169; Peiresc to the Brothers Dupuy, 24 Oct 1633, PL 2: 629; Peiresc to Aycard, 4 Nov 1633, PL 7: 316.

[110]Gassendi to Diodati, 29 Aug 1634, MC 4: 340.

[111]Gassendi, Book 2: 148.

Protocol of Patronage

Private academies were founded on a protocol for scientific investigations. Peiresc established a procedure for acceptable observations and distributed reward for compliance. Patronage and gift-giving were important components in the development and dissemination of scientific activity.

After Peiresc visited a cabinet in Marseilles and received "small curiosities," he reciprocated with gifts of books and offers of service.[112] But not all members of the scientific community were willing to cooperate or share. When the Jesuit Jacques Sirmond would not lend a book, Peiresc planned to complain to Cardinal Barberini "as sometimes these little methods are required" for compliance.[113] The collector Jean Hallé never returned one of Peiresc's rare books;[114] the Baron de Flayosc's widow did not allow Gassendi to retrieve Peiresc's books. "I do not know the reason for her jealousy," wrote Gassendi, "[unless] she is afraid that I will discover the book on martyrdom . . . that she denied having."[115]

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[112]Peiresc to Valavez, 24 May 1625, PL 6: 182-183.

[113]Peiresc to the Brothers Dupuy, 23 July 1633, PL 2: 568.

[114]Peiresc to Brothers Dupuy, 24 Feb 1627, PL 1: 150.

[115]Gassendi to Peiresc, 3 Sept 1635, PL 4: 541.

Although the community was founded on the ideal of cooperation, there were rivalries. Within Peiresc's own circle, Gaultier refused to recognize Gassendi's observations of the transit of Mercury and was angered when Gassendi deferred to other astronomers.[116] There were disputes over authorship,[117] which Peiresc compared to lovers' quarrels.[118] Some confrontations arose as individuals competed for prestige and recognition. Galileo sought to sustain his position in the court of a prince by continued publications and favors. Naudé wrote of one individual who wanted "to prevent his friend from publishing or using certain manuscripts that come into his hands."[119] Mersenne intentionally fostered conflict,[120] forcing contenders to define their positions.[121] Peiresc,

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[116]Peiresc to Gassendi, 18 Jan 1634, PL 4: 422-425; Peiresc to Gassendi, 17 June 1635, PL 4: 514-515.

[117]Peiresc to Naudé, 31 Jan 1636, PN 75.

[118]Peiresc to Menestrier, 20 Oct 1633, PL 5: 659.

[119]Naudé to Peiresc, 29 March 1636, NP 350.

[120]Robert Mandrou, From Humanism to Science, 1480-1700, trans. Brian Pearce (Middlesex, UK: Penguin, 1978), 191.

[121]See Charles Bazerman, Shaping Written Knowledge: The Genre and Activity of the Experimental Article in Science (Madison: University of Wisconsin Press, 1988), 130; Rupert Hall and Marie Boas Hall, "Anglo-French Scientific Communication in the mid-Seventeenth Century," Science et sociétés: Relations-influences-écoles, xii congrès international d'histoire des sciences (Paris: Albert Blanchard, 1971), 66.

who subsidized many of Mersenne's works, demanded that he "abstain from berating the ignorance of people [and] . . . faulting them heavily without a pressing reason."[122] Still other individuals were easily offended by what they considered a disregard for protocol. The Italian astronomer Camille Glorioso complained about the omission of his titles from Gassendi's account of the observation of an eclipse. Peiresc commented that Gassendi was "hardly accustomed to these superlative titles." In the future, Peiresc continued, Gassendi would include Glorioso's titles of "Italian professor, monseigneur, his excellence, and with all the praise."[123]

While many natural philosophers sought to enhance personal prestige through publications and dedications, Peiresc preferred sharing "thoughts and fantasies among several friends."[124] But Peiresc could not resist alluding to his role in organizing celestial observations in the Levant--observations that he stressed were made at his "request."[125]

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[122]Peiresc to Mersenne, 18 June 1634, MC 4: 181; Peiresc to Mersenne, 3 July 1635, MC 5: 277-278.

[123]Peiresc to Naudé, 31 July 1636, PN 94.

[124]Peiresc to P. Dupuy, 9 May 1634, MC 4: 115.

[125]Peiresc to Agathange de Vendôme, 5 Sept 1635, PV 168.

Correspondence Networks

While private gatherings provided a forum for the exchange of ideas, correspondence offered a means of extending exchanges throughout Europe and the Levant. The literary republic of the fifteenth and sixteenth centuries developed into a scientific network through which observations of natural phenomena were shared.[126] Letters and small booklets offered a means of sending scientific news at a time when the press and book trade were controlled by censors and when scientific publications were limited to texts of Aristotle, Hippocrates, and Galen.[127] With ties in influential circles and contacts with hundreds of correspondents, Peiresc gained recognition as one of the main gatekeepers of the Republic of Letters,[128] an international community of scholars who exchanged information through correspondence networks.

Personal letters provided the most efficient method of rapidly communicating ideas. The following section examined the method of exchange and the role of the gatekeeper in communication networks.

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[126]Mandrou, Humanism, 195-196.

[127]Henri-Jean Martin, Livre, pouvoirs et société à Paris au xviie siècle (1598-1701), 2 vols. (Geneva: Librairie Droz, 1969), 1: 220.

[128]Brown, Scientific Organizations, 5.

Methods of Exchange

Letters provided a means of transmitting information across geographical and political boundaries. They were carried by scholars or were sent through intermediaries, patrons, or the diplomatic pouch. An exchange of 15 February 1637 between Mersenne (Paris) and Descartes (Leiden) was carried by diplomats to avoid censors. Mersenne wrote, "Never have we been more exacting than at present for the inspection of books, as Monsieur the Chancellor [Pierre Séguier] has qualified agents to determine what is theological [or] political."[129] This caution was reflected during Galileo's questioning (1633), when Peiresc warned Gassendi "not to divulge [Galileo's sentence] . . . as it has been kept so secret in Rome."[130]

News and mail were the subject of much discussion in personal correspondence. Peiresc regretted that the boat of Captain Chaillon brought him no mail from Alexandria. He wrote of the letters and books that were ruined by the "negligence" of a child who dropped the parcel of mail in the mud;[131] he inquired about a basket of Renette apples that never arrived.[132] His contacts in Paris provided news

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[129]Mersenne to Descartes, 15 Feb 1637, MC 6: 186-187.

[130]Peiresc to Gassendi, 12 Aug 1633, PL 4: 342.

[131]Peiresc to Agathange de Vendôme, 18 July 1636, PV 237-238.

[132]Peiresc to Guillemin, 17 Dec 1624, PL 5: 39.

of the royal court, of foreign events, and of scientific innovation. "Your [arriving] letters carry us in a moment to the midst of your academy," wrote Peiresc who, at the time of writing this letter, had not returned to the Cabinet Dupuy for seven years.[133] From the south of France, Gassendi told a friend in Paris:

> I no longer tell you of my extreme joy in receiving and reading your letters, or in thanking you for your care in sending me all the Gazettes and other, more specific news. I beg you to continue not only for my personal pleasure but for more occasions to serve [or become indispensable to] well-bred people of this city. We are very far from trade and only receive some rumors from Aix.[134]

Gassendi wrote in July 1630 that he had just received five of Peiresc's letters along with several packages. Although these letters contained news six months old, Gassendi "rejoic[ed] infinitely given the hunger I had for your news and for the wonderful and agreeable things they contain."[135] Letters were often read aloud in meetings and recopied before being sent on to their destination. Each correspondent had the obligation to maintain and extend the communication networks, and to respond quickly to requests

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[133]Peiresc to the Brothers Dupuy, 17 Jan 1630, PL 2: 230.

[134]Gassendi to Luillier, 29 Dec 1632, GL 44.

[135]Gassendi to Peiresc, 21 July 1630, PL 4: 241.

for information and for loans of manuscripts or artifacts.[136]

Peiresc was plagued with many infirmities which slowed his scientific investigations and limited his ability to travel in later life. Through correspondence, he requested friends to visit cabinets and make observations in his place. In fact, he entrusted his brother with contacting approximately 200 individuals in four countries in 1608.[137] He requested information and a plaster mold of an antique lamp in the shape of a satyr in Lyons,[138] detailed descriptions of nature, and the location of "some worthy painter who would undertake to draw [an elephant] . . . and a great naturalist who would observe."[139] Illustrations, drawings, and accounts by eye-witnesses--all representations of objects--provided acceptable "substitutes."[140] Objects were placed in cabinets and information was recorded in journals. These acquisitions were also used as a type of currency to procure services from other correspondents.

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[136]Paul Dibon, "Communication in the Respublica Literaria of the 17th Century," Res publica litterarum: Studies in the Classical Tradition 2 (1978): 46.

[137]PL 6: 668-669.

[138]Peiresc to Menestrier, 21 Nov 1632, PL 5: 610.

[139]Peiresc to the Brothers Dupuy, 4 Jan 1627, PL 1: 122.

[140]Olmi, 7.

Peiresc's quest for information led him to seek out correspondents specializing in subjects ranging from natural history and witchcraft to anatomy and astronomy. He specified observations to be made and testimony to be acquired. Names of witnesses or observers of high social status lent credibility to scientific reports.[141] In cases of demonic possession, he stressed the importance of testimonies by physicians or persons of honor.[142] By including the names of witnesses who participated or observed, Peiresc gained authority for his claims among his correspondents.

Letters conveyed a diversity of information. Not only did correspondence reveal the nature and extent of scientific investigations, but it provided a mapping of correspondents by interest and geographical location. Peiresc wrote the notary Boniface Borrilly in Aix about antiquities and melon seeds;[143] Arcos about the habits of chameleons and rituals of African tribes;[144] or Naudé regarding the unreliability of Italians.[145] The exchanges

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[141]Peiresc to Mersenne, 20 Aug 1635, MC 5: 359; and Yvette Conry, "Peiresc et l'ordre des `portraits' dans les investigations du xviie siècle," Peiresc ou la passion de connaître, ed. Anne Reinbold (Paris: J. Vrin, 1990), 127.

[142]Conry, 127.

[143]Peiresc to Borrilly, 20 April 1632, PL 4: 45.

[144]Peiresc to Arcos, 25 Jan 1634, PL 7: 123.

[145]Peiresc to Naudé, 5 Nov 1635, PN 63.

with Gassendi included a range of information: news of family, health problems, interpretations of ancient inscriptions, and data on celestial observations. The Dupuys provided contacts with European circles and the crown. Despite an interest in the activities of the king, Peiresc asked the Dupuys to "remind Diodati of his promise to give you an ample account of the general ideas that Galileo has in his head, which should be conveyed sooner than the ceremonies and other public occurrences."[146]

Correspondence also provided the medium through which gifts were sent and curiosities acquired. Peiresc responded to Malherbe's request for a special cloth and the essence of orange flower for the ladies of the court in Paris in exchange for small gifts, poetry, and news. Arcos shipped chameleons, manuscripts, and bones from Tunisia. The clerics Pierre and Nicolas Antelme sent Roman artifacts from the ruins at nearby Fréjus. But not all attempts to acquire unique objects were successful. Four rare books were lost when a ship sank on the Nile.[147] Peiresc was swindled when he attempted to acquire the marbles of Paros.[148] On other occasions Peiresc complained that of

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[146]Peiresc to the Brothers Dupuy, 8 April 1627, PL 1: 198.

[147]Peiresc to Cassien de Nantes, 22 July 1636, PV 242.

[148]Humbert, Amateur, 133.

his "two crates of Greek manuscripts from the Levant, one arrived wet and several volumes partially rotted."[149]

Peiresc's status as a gatekeeper in the correspondence networks did not guarantee unlimited access to exchanges. Gassendi's letters to Peiresc were brimming with admiration, yet a few of his exchanges with Luillier portrayed Peiresc as domineering and jealous.[150] Some information was retained.[151] Naudé shared his impressions of Roman affairs with Peiresc, which he asked not to be conveyed to Barberini.[152] When the astronomer Ismaël Boulliau portrayed the members of the Cardinal Richelieu's Académie Française, as "Mustachios . . . [who] will stifle the knowledge of languages and letters," he asked the Dupuys not to show the letter to his friends who were among its members.[153]

Maintaining epistolary contact with large circles of correspondents was time-consuming. Letters ranged in length from the brief note accompanying a package of books to the lengthy essay. Postscripts, hurriedly added to meet the departure of the mail, were often several pages long.

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[149]Peiresc to Holstenius, 16 June 1633, PL 5: 408.

[150]Gassendi to Luillier, 4 Dec 1632, GL 19.

[151]Peiresc to Naudé, 31 Jan 1636, PN 75.

[152]Naudé to Peiresc, 30 June 1636, PC 2: 92.

[153]Boulliau to the Brothers Dupuy, 1645, quoted in Brown, Scientific Organizations, 64-65.

Gassendi told of "having written all morning (in fact I sent 10 letters to Paris, one of which is in Latin)"[154] and complained that correspondents often "expected to acquire rapidly more information about what was going on in the world by our communication than by another route."[155] Renaudot acknowledged Peiresc's extensive correspondence networks, asking him to share the news with the Gazette.[156] As a gatekeeper, Peiresc processed and distributed news quickly. Later in his life, Peiresc wrote that he was "overwhelmed" with letters and "too insignificant to have secretaries required to satisfy everyone, and too infirm to do it alone."[157] Often delays in response arose from problems in the mail service caused by the plague or bad weather. On other occasions, letters might be delayed by more immediate concerns, such as the impending death of a correspondent. Naudé in Rome wrote "the sieur Pietro la Seina was in bed with a fever . . . I did not consider it appropriate to send your letter and that of Mr. Gassendi to the Sieur Camillo out of fear that they would be misplaced

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[154]Gassendi to Peiresc, 30 Jan 1634, PL 4: 440.

[155]Gassendi to Luillier, 4 Dec 1632, GL 19.

[156]Peiresc to the Brothers Dupuy, 18 April 1633, PL 2: 498.

[157]Peiresc to the Brothers Dupuy, 15 Oct 1635, PL 3: 390.

during this illness or that they would be lost if the end was worse."[158]

Gatekeepers

As a seventeenth-century gatekeeper, Peiresc initiated exchanges among correspondents or transmitted and read letters addressed to friends "according to the freedom" which he was granted.[159] Peiresc disseminated Galileo's observations throughout Europe and introduced the telescope in Provence.[160] He used correspondence to organize telescopic observation stations. His authority as a gatekeeper was derived from his social status and official positions.

Peiresc's Public and Private Roles

Peiresc's position in Parlement and in the church offered him a means of legitimizing scholarly endeavors in the scientific community. Family wealth, intellectual ability, and connections with European elite circles enabled Peiresc to cross geographical and social boundaries and to seek exchanges with scholars in numerous disciplines (antiquities, philology, archaeology, astronomy, anatomy).

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[158]Naudé to Peiresc, 20 Sept 1636, PC 2: 94.

[159]Peiresc to Luiller, 22 June 1634, PC 2: 277.

[160]Pierre Humbert, "Les astronomes français de 1610 à 1667," Mémoires de la Société d'études scientifiques de Draguignan 63 (1942): 7.

He was a Catholic and a Copernican. He upheld church dogma and received libertines. He corresponded with priests, natural philosophers, cardinals, Protestants, and a Moslem convert. He had contacts throughout Europe and the Levant: Tunisia, Egypt, Lebanon, and what is now Turkey. As a magistrate, he presided at witchcraft trials and had the power to hand down the death sentence. In the privacy of his study, he investigated the mysteries of nature: rains of blood, demonic possession, magnets and lodestones. Peiresc attended the trial of the priest Louis Gaufridy, who was burned at the stake for witchcraft in 1611. Writing from the royal court, Malherbe said that Peiresc's accounts of the trial pleased the queen and ladies of the court--particularly the part about the priest's breath enamoring women. "I beg you, Monsieur," wrote Malherbe, "that whoever sets to writing this does it precisely and diligently and omits nothing which can satisfy the curious."[161] Hence, while publicly recognizing the authority of the Parlement, Peiresc privately questioned traditional beliefs.

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[161]Malherbe to Peiresc, 13 May 1611, Oeuvres de Malherbe, ed. Antoine Adam (Paris: Gallimard, 1971), 511.

Summary

Private academies and correspondence networks provided forums for the exchange of ideas as well as a means of legitimizing scientific activity when radical views threatened the traditional world-view. Members of these academies and correspondents were obligated to cooperate in the advance of knowledge by responding quickly to requests for information and by sharings books and artifacts. What originated in the sixteenth century as literary republic for the exchange of philological information, developed into scientific exchanges.

Positions in the church and Parlement afforded Peiresc a salary and social status, which enabled him to promote and legitimize scientific initiatives. Personal correspondence provided the channel through which Peiresc solicited information on natural phenomena, such as the observations of a lunar eclipse for his work on a method of determining terrestrial longitude. He also used letters to secure recognition of his scientific claims by members of the scientific community. Peiresc included detailed descriptions of observations as well as the identification of witnesses by social position, a means of ensuring recognition.

CHAPTER 3
CENSORSHIP

For centuries, the church served as a liaison with God, offering a means of attaining salvation. The Protestant Reformation and ensuing religious wars (1562-1598) undermined the authority of the Roman Catholic church in Europe. The Concordat of Bologna, signed in 1516 by François I and Pope Leo X, recognized the right of the French kings to appoint their own bishops and members of the high clergy.[1] Furthermore papal decrees became official in France only when ratified by the Sorbonne and when promulgated locally.[2] When Galileo's Dialogue Concerning the Two Chief World Systems was condemned in Italy and Paris of Belgium in 1633,[3] the papal nuncio in Paris, Alexandre Bichi, should have transmitted the sentence to the Sorbonne, the institution responsible for its promulgation. Bichi withheld it from the Sorbonne.[4]

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[1]Robert Mandrou, Introduction to Modern France, 1500-1640, trans. R.E. Hallmark (New York: Holmes and Meier, 1976), 192.

[2]David T. Pottinger, The French Book Trade in the Ancien Regime: 1500-1791 (Cambridge, MA: Harvard University Press, 1958), 60.

[3]MC 3: 465.

[4]Armand Beaulieu, "Les réactions des savants français au début du xviie siècle devant l'héliocentrisme de Galilée," Convengo internazionale di studi galileiani, ed. P. Galluzzi (Florence: Giunti Barbara, 1984), 375.

The decree had no official status in France and could not be enforced. Due to the confusion over the status of the decree, natural philosophers, many of whom were clerics, remained cautious in expressing their views.

The Waning Authority of the Catholic Church

New methods of communication brought esoteric knowledge--the "secrets tradition" and the Bible--into the hands of a general reading public. Intellectual gatherings outside the traditional university context provided a place in which discussions could take place beyond church control. The availability of information and the questioning of traditional views threatened the authority of the church in society. The following sections provide an examination of the church's attempts to restore its authority through laws, social control, and the Inquisition. But rivalries among censoring agents prevented the effective control of communication channels.

Role of the Press

Movable type provided a means of increasing the sale of indulgences, promulgating papal bulls, and standardizing liturgy while simultaneously complicating the task of censors.[5] Scholars such as Gassendi compared works of

[5]Elizabeth L. Eisenstein, The Printing Press as an Agent of Change: Communication and Cultural Transformations in Early-Modern Europe (Cambridge: Cambridge University Press, 1979), 303-304.

ancient philosophers and located discrepancies in commentaries and translations. Peiresc used astronomical tables to date ancient manuscripts[6] and the battle at Arbela, which took place during a solar eclipse. Mersenne and musical humanists studied mathematics to understand the structure of the world.[7] Their published dialogues revealed their concern with proof and certainty of knowledge as well as their exposure to the Copernican propositions.[8] Furthermore, the public now had access to the Bible in the vernacular; many individuals questioned Biblical literalism. Astronomers, freed from the onerous task of copying the ephemerides, devoted time to collation and correction of tables of planetary movements. In his Admonito, Kepler informed astronomers of the anticipated date of the transit of Mercury across the sun. Gassendi published his observations of this transit and circulated them throughout Europe.[9] Galileo used the press to secure recognition for his observations of the moons of Jupiter

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[6]Anthony Grafton, Defenders of the Text, The Tradition of Scholarship in an Age of Science, 1450-1800 (Cambridge, MA: Harvard University Press, 1991), 186.

[7]Frances A. Yates, The French Academies of the Sixteenth Century (1947, repr., London: Routledge, 1988), 25, 286-287.

[8]Yates, 95-97.

[9]Albert Van Helden, "The Importance of the Transit of Mercury of 1631," Journal of the History of Astronomy 7 (1976): 1-10 passim.

described in The Sidereal Messenger. Printers popularized guild secrets through practical handbooks on astrology and alchemy.[10] Publishing, once limited to breviaries or translations of classical philosophies, now included almanacs, layman's guides to metallurgy, and books expounding the secrets tradition of formulas, and recipes used by alchemists and craftsmen.[11]

The advent of the press, the rediscovery of ancient texts, and Biblical exegesis gave rise to questions concerning the criterion of truth in traditional terms--reason or revelation. Some scholars suspended judgment on issues of religion; others maintained that certainty could only be achieved through faith; still others believed that a knowledge of appearances rather than a knowledge of reality was possible and sufficient.[12]

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[10]William Eamon, "Arcana Disclosed: The Advent of Printing, The Books of Secrets Tradition and the Development of Experimental Science in the Sixteenth Century," History of Science 22 (1984): 113, 119-121.

[11]Eamon, "Arcana," 111-114.

[12]Richard Popkin, The History of Scepticism: From Erasmus to Spinoza (Berkeley: University of California Press, 1979), 53-54, 129-131.

Social Control

Insidious forms of social control provided one means of protecting the traditional world-view and authority of the Holy Scriptures. Church superiors warned that curiosity diverted theologians from their studies and that examinations of hidden causes and higher things (e.g., God) could lead to heresy.[13] The discovery of reportedly new forms of life, such as marine fossils, contradicted the order of creation in Genesis and was subject to censorship.[14]

Following the reforms of the Council of Trent in the mid-sixteenth century, the church attempted to standardize dogma and practice by eliminating local miracles and certain feast days. Yet it seemed "superstition" remained. Many clerics pursued heretics and witches.[15] Witchcraft trials and staged rituals of exorcism united the church and the common people in their fight to eliminate evil from society.[16] Some clerics portrayed nature as capable of

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[13]Carlo Ginzburg, "High and Low: The Theme of Forbidden Knowledge in the Sixteenth and Seventeenth Centuries," Past and Present 73 (1976): 32.

[14]Keith Hutchison, "What Happened to Occult Qualities in the Scientific Revolution," Isis 73 (1982): 236-237.

[15]Steven Shapin and Barry Barnes, "Science, Nature and Control: Interpreting Mechanics' Institutes," Social Studies of Science 7 (1977): 31-74.

[16]Stephen Greenblatt, "Loudun and London," Critical Inquiry 12 (1986): 330-334.

reward and punishment. Poor crops, earthquakes, and rains of blood were signs of God's vindication.[17] Peiresc wrote that many workers left the fields during the rains of blood out of "great fear that they would be bloodied." Some believed that these rains were caused by "exhalations" of the earth while others insisted it was the work of "demonic spirits."[18] Astrologers warned that the comet of 1618 would bring destruction to the French army in Persia and the death of great men.[19]

As the study of nature gradually gained acceptance as a means of learning about God, natural phenomena were no longer viewed as presages, but as valid subjects of scientific inquiry.[20] After observing numerous butterflies in the region during the so-called rains of blood, Peiresc determined that what was commonly recognized as a presage was actually caused by a secretion from insects. An excerpt from one of Gassendi's letters on presages represented this new approach to investigations of nature,

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[17]Katharine Park and Lorraine J. Daston, "Unnatural Conceptions: The Study of Monsters in Sixteenth- and Seventeenth-Century France and England," Past and Present 92 (1981): 25-26.

[18]Peiresc to Malherbe, 15 July 1608, PM 26-27.

[19]Mercure français (1618) 5: 279.

[20]The authors considered this change in approach as accompanied by a separation between the educated and general public. Park and Daston, 36-41.

> I put this phenomenon [presage] in the rank of things purely natural and believe that if it is a sign of something, it is only of some natural effect. I do not mean to say that God cannot use it to indicate something extraordinary to us, but we have no proof whatever, and believe that God does not play in this way with men as when you propose things to dream and guess to small children. When He wants a rainbow to be a sign of something supernatural, He will warn men . . . it is pitiful to see that most scholarly men are carried away by popular opinion and that these phenomena, which occur rarely, blind them to the true causes in nature.[21]

Censorship Procedures

Faced with the Protestant Reformation, the rapid dissemination of information, and a new experimental science, the church implemented the following reforms developed by the Council of Trent (1547-1563): standardization of dogma, guidelines for translations of the Bible, and revival of the Inquisition. The church regulated the book trade. A council of inquisitors composed of members of Parlement and theologians of the Sorbonne examined and censored all religious works prior to publication. If the content was acceptable, the Sorbonne granted a permit to print.[22] By the mid-sixteenth century,

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[21]Gassendi to Peiresc, 15 June 1629, PL 4: 195 text in notes.

[22]Pottinger, 211. By 1543, the Sorbonne published a list of 65 prohibited books, all religious in content; Pottinger, 57.

the French government inspected presses[23] and importations from Protestant countries.[24] By 1563, authors, editors, and publishers of newspapers needed a privilege or copyright as well as a permit from the censors. While the permit provided an approval for content, the privilege granted a limited copyright to a publisher. The privilege or letters patent carried the Great Seal of State and was awarded by the chancellor, head of the Council of Ministers.[25] As an example, the privilege in a book by Mersenne granted the right to print "several treatises on philosophy, theology, and mathematics" with the approbation of the theologians of the Sorbonne and that of the Order of the Minims.[26]

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[23]See Henri-Jean Martin, Livre, pouvoirs et societe a Paris au xvii siecle (1598-1701), 2 vols. (Geneva: Librairie Droz, 1969), 1: 56; Isambert, Jourdan, Decrusy, eds., Recueil général des anciennes lois françaises, 29 vols. repr. in 4 vols. (Paris, n.p., 1821-1833; repr., Ridgewood, NJ: Gregg, 1964-1966), 2 (13): 196.

[24]Edict of Chateaubriand, 1551. The Edict of Romorantin (May, 1560) defined sedition in terms of those slanderous writings that disturb the public peace. Isambert, 2 (13): 203-204.

[25]The Ordinance of Moulins (1566) held that all printed works must carry the privilege and seal and the name and address of the printer. Isambert, 2 (14): 210.

[26]The approbations were dated 20 June 1634 and the privilege of the king in August 1634. MC 4: 203.

Newspapers also carried the letters patent, a royal copyright or monopoly, for a specified number of years.[27] Théophraste Renaudot's letters patent for his Gazette enabled him to quash competition during the lifetime of his patron, Cardinal Richelieu. With editorial policy guided by the cardinal, Renaudot's paper served as an organ of royal propaganda. Articles enhanced the image of the king and state. Military victories were emphasized while news of territorial losses was suppressed.[28] Peiresc often questioned the veracity of Renaudot's news, which he unfavorably compared to the more "faithful" reporting of Dutch papers.[29]

Practices in Europe

The extent of censorship varied throughout Europe. The exchange of information was often greater in the politically-fragmented countries, such as in the German states, where there was no central control of

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[27]Books carried the names of theologians granting the permit. One example of a permit for Mersenne read with "the approval of the Sorbonne, signed by the doctors H. Bachelier et I. Badel," dated in Paris, 14 February 1622; the privilege of the King, signed by Renouard, is dated in Paris, 17 February 1622, and the printed edition was completed 1 February 1623. MC 1: 124.

[28]Howard Solomon, Public Welfare, Science, and Propaganda in Seventeenth-Century France: The Innovations of Théophraste Renaudot (Princeton, NJ: Princeton University Press, 1972), 127-128, 134, 149.

[29]Peiresc to the Brothers Dupuy, 10 Oct 1633, PL 2: 620.

communication. In certain parts of Italy, church officials inspected publications. In Florence, however, many editors were protected by scholarly princes, while Padua, located in the anti-papist state of Venice, became an intellectual center of Europe.[30] Holland and England provided a relative haven for writers and publishers.[31] Many Huguenots settling in Holland arranged for the publication of scientific works; but even here, academic freedom was not complete. The Dutch condemned the works of Catholics and rival Protestant sects;[32] the Estates-General of Holland prohibited the practice of Catholicism.[33] In Calvinist Geneva permits were needed to publish, and Catholic books were burned and altars were demolished.[34]

In France, the book trade was regulated by printers, booksellers, and laws. Two printers and two sworn booksellers were elected to serve two-year terms, during which time they registered books and reported heretical

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[30]John Herman Randall, Jr., "The Development of Scientific Method in the School of Padua," Journal of the History of Ideas 1 (1940): 184.

[31]Mandrou, Humanism, 213-227.

[32]Paul F. Grendler, "Printing and Censorship," The Cambridge History of Renaissance Philosophy, ed. Charles B. Schmitt (Cambridge: Cambridge University Press, 1988), 48-49.

[33]MC 2: 488.

[34]George Haven Putnam, The Censorship of the Church of Rome, 2 vols. (1906, repr., New York: Benjamin Blom, 1967), 2: 237.

works.[35] The Syndical and Royal Chamber of Booksellers, Printers, and Binders of Paris (i.e., Book Guild, ca. 1618) regulated the quality of materials used, the number of presses per shop, and membership in the guild.[36]

In addition to the required permits and privileges, other laws governed the procedure for submission of works. According to the Code Michaux (1629), two copies of each book were to be given the chancellor, who appointed censors according to their expertise.[37] The censor signed each page and initialed each correction, certifying, "I have read, by the order of the Chancellor, a manuscript entitled _____. I have found nothing in it to prevent the printing of it."[38] The chancellor would issue or withhold a permit on the basis of the censor's decision.[39] If content was unacceptable, the censors expurgated portions of text or withheld the permit pending revisions. Some works were condemned as heretical and placed on the Index of Prohibited Books.

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[35]Pottinger, 120-122.

[36]Pottinger, 122-123.

[37]Martin, 1: 442.

[38]Pottinger, 70.

[39]Pottinger, 70.

Rivalries for Control

Although publications were controlled by the church and state, rivalries between the Parlement and Sorbonne led to erratic enforcement of laws governing the book trade and inconsistent procedure in granting permits and privileges.[40] At times, books carried the names of fictitious authors and publishers or forged permits and privileges. Censored texts were circulated by police and colporteurs. Some texts and French language newspapers were printed by Huguenots in Holland and shipped across borders.[41] Furthermore, censorship actually piqued the readers' curiosity. Protestant publishers established lucrative businesses by printing texts which were condemned in Catholic countries.[42]

With a surge in publications in part brought on by the advent of movable type, censors at the Sorbonne were forced to limit their inspection to texts that could "most harm" readers.[43] Printers complained about the lengthy delays in

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[40]In France, the main censoring agents included the Sorbonne, (the theological faculty of the University of Paris), Faculty of Medicine, Parlement, the chancellor, and Provost of Paris (over the police). Léon Sabatie, La censure (Paris: Pedone, 1908), 52-67.

[41]Pottinger, 71.

[42]Eisenstein, 645-646, 655-656, 676.

[43]Pottinger, 60.

receiving a permit. By law, they were forced to await the decision of the Sorbonne before applying to the chancellor for a privilege.

Censorship was used to protect religious dogma and to preserve traditional methods of medical practice. Steeped in the traditions of Hippocrates and Galen, the Faculty of Medicine of the University of Paris condemned books on chemical remedies in order to maintain the practice of purges and bleeding.[44] All books on chemical treatments were examined by two members of the medical faculty, as well as by the heads of the university faculties and the rector.[45] This faculty maintained a distinction between physicians and barber surgeons who could perform surgery and used censorship liberally to bar Protestants from medical practice.[46] Renaudot, who worked as a journalist and physician, converted to Catholicism upon coming to Paris. He promoted chemical treatments of disease only during the lifetime of his patron, Richelieu.

Role of the Inquisition

The church and state sought to restore social order through censorship laws and the Inquisition. Under the Ordinance of Villers-Cotterets (1539), the procedure used

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[44]Solomon, 167-168.

[45]Pottinger, 57.

[46]Solomon, 166.

by the Roman Inquisition in censoring texts and questioning individuals was recognized in France.[47] The gradual transfer of power from the theologians of the Sorbonne to the magistrates of Parlement in heresy trials[48] had two major implications. Magistrates were simultaneously pursuing a new experimental science and heretics. Furthermore, the meaning of heresy and the nature of punishment changed. While heresy originally was defined as involving a persistent and determined disavowal of the faith, in the seventeenth century it was extended to include the purposeful opposition to religious dogma, which was viewed as a crime against the state.[49]

Charges of sorcery and heresy often originated from accusations by an individual.[50] Mersenne was notorious for his vicious attacks on astrologers (Questions in Genesis, 1623)[51] and deists (Impiety of Deists, Atheists, Libertines, 1624), whom he accused of restricting God's

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[47]Raymond A. Mentzer, Jr., Heresy Proceedings in Languedoc, 1500-1560 (Philadelphia: American Philosophical Society, 1984), 104. For procedure of criminal and heresy trials, see Isambert, 2 (12): 629-634.

[48]Mentzer, 11, 67-68.

[49]Mentzer, 10-11.

[50]Several edicts of 1540 advised citizens to of their duty to the state to eliminate heresy and sedition. See Isambert, 2 (12): 680.

[51]MC 1: 42.

will.[52] Some of Mersenne's "victims" (e.g., Vanini and Bruno) were dead long before these publications appeared.

As characteristic of trials in France, the accused heretic learned of the charges only at the trial and did not have a defense counsel. In Italy, witnesses and accusers remained anonymous; in France, they confronted each other at the trial to avoid mistaken identity.[53] The testimony gathered by the inquisitor was then evaluated by a royal prosecutor and presented in Parlement, where judges reached a decision concerning the sentence.[54]

Punishment for heresy and witchcraft ranged from forced retractions and book burning to an occasional execution. There was a tendency in France to obliterate any vestige of the crime--be it the text or the individual.[55] Giulio-Cesare Vanini was burned at the stake in Toulouse on 9 February 1619 for his works in astrology and his criticisms of the miracles of the church as tricks to deceive the public.[56] Vanini had received the permit or approval to print from the Sorbonne for this work only six

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[52]MC 1: 147.

[53]Mentzer, 69.

[54]Mentzer, 103.

[55]Soman, 452.

[56]Robert Lenoble, Mersenne ou la naissance du mécanisme (1943, repr., Paris: J. Vrin, 1971), 178.

years earlier.[57] While Vanini was burned, another individual accused of pernicious writings was only exiled from Paris--a discrepancy in punishment that has been described as demonstrating "the same sin, implacably condemned with one man, was considered only venial with one friend of the great lords."[58] In Paris, 14 theses on chemical doctrines were condemned in 1624. The Sorbonne and the Parlement of Paris destroyed these documents and exiled their authors. After the condemnation of these doctrines, Jean-Baptiste Morin published a French translation in the form of a retraction.[59] Not only was Morin protected by a highly-placed patron in the church, Cardinal de Bérulle, but he held an official position at the Royal College in Paris and had earned renown for the accuracy of his horoscopes of kings and rulers.[60]

Generally, the medical faculty maintained tight control over works relating to its profession. Difficulties arose when Renaudot, protegé of Cardinal Richelieu, offered medical care to indigents in Paris.[61]

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[57]Pintard has noted that Vanini received approval for the permit by a Doctor Cordelier. René Pintard, Le libertinage érudit dans la première moitié du xviie siècle (Paris: Boivin, 1943; repr. Geneva: Slatkine, 1983), 185.

[58]Pintard, 34.

[59]MC 1: 167-168.

[60]MC 3: 175-176.

[61]Solomon, 173-177.

Renaudot also circulated self-help booklets, Présence des absens, which enabled individuals to indicate the source of discomfort, describe the symptoms of disease with diagrams, and receive a diagnosis through the mail.[62] With the death of his patron in 1642, Renaudot was no longer protected from the attacks of the Faculty of Medicine[63] and was accused of lack of medical professionalism, an absence of religious and moral values, and of encroachment of the functions of the university. The medical faculty took over his consultations in 1644.[64]

In Italy, Giordano Bruno (1548-1600) interpreted Copernicanism as the return of an ancient Egyptian religion, which was based on the power of the sun and the writings of Hermes Trismegistus. Bruno was burnt at the stake on 16 February 1600, in Rome, for his beliefs in an infinite universe and the plurality of worlds.[65] Tommaso Campanella was imprisoned for 27 years in Naples by the Spanish Inquisition and for several years in Rome for his attacks on Aristotelianism.[66] Following his release from prison, he sought refuge in France.

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[62]Solomon, 176.

[63]Solomon, 185-190.

[64]Solomon, 188.

[65]MC 1: 137, 147.

[66]MC 1: 131.

In some cases, persecution arose following a change in patronage relationships. Galileo dedicated The Sidereal Messenger (1610) to the Medici family. The Accademia dei Lincei supported many of his publications. Following the death of his patrons, Galileo encountered problems while trying to obtain permission to publish his Dialogue Concerning the Two Chief World Systems (1632). As Galileo explained, a censor advised him to change wording: to use "universe instead of nature, title instead of attribute, and sublime genius instead of divine."[67] In spite of these changes, Galileo did encounter problems with the Inquisition.[68]

Even priests fell victim to the Inquisition. Near Marseilles, a young girl named Madeline de Demandols accused a parish priest Louis Gaufridy of witchcraft. When she later attempted to retract her statement, the jury believed this change of mind to be the work of the devil.[69] Gaufridy was burned at the stake in 1611. Twenty-three years later, a Protestant cleric, Urbain Grandier of

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[67]Galileo to Diodati, 15 Jan 1633, Paul-Henri Michel, ed., Galilée: Dialogues et lettres choisies (Paris: Hermann, 1966), 413.

[68]The Galileo affair will be discussed in Chapter 6.

[69]Peiresc to Malherbe, n.d. April 1611, PM 62.

Loudun, was burned on 18 August 1634 for what the Gazette described as "`magic and other impressive crimes.'"[70]

The Gaufridy trial illustrated the ambiguous position of French magistrates. As members of a new intellectual order, the magistrates sought to rid science of superstition.[71] As supporters of orthodox belief, they actively pursued heretics. Many, such as Peiresc and Mersenne, took a "scientific" interest in examining the physical traits of demonic possession, exchanging information on witchcraft for a period of 20 years.[72]

Peiresc was present at the Gaufridy trial in Aix. According to Gassendi's account, at the start of the trial, Peiresc was "of the same opinion with the common people, moved chiefly by those senseless fears, which were based on the marks found on both their bodies [Gaufridy's and Madeline's] and believed to be tokens of witchcraft. He began afterwards to doubt . . . [but] always upheld the sentence of the Court."[73] Gassendi intimated that Peiresc

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[70]Renaudot, Gazette, 26 Aug 1634, quoted in Solomon, 190. Pintard has suggested that the death of Grandier may have been orchestrated by Richelieu. Pintard, 222.

[71]Cristina Dessì, "Peiresc et la sorcellerie," Peiresc ou la passion de connaître, ed. Anne Reinbold (Paris: J. Vrin, 1990), 90.

[72]Mandrou, Humanism, 146-147.

[73]Pierre Gassendi, Book 2, The Mirrour of True Nobility and Gentility, trans. William Rand (London: J. Streater, 1657), 149.

privately questioned the existence of witches but continued to recognize the authority of the Parlement's verdict.

The Gaufridy trial received much attention in correspondence and the press. Peiresc provided Malherbe with a continual source of information on the trial. His early letters described accusations as originating when a "girl from the Ursaline convent (of the house de La Palue), who was possessed by three demons . . . [accused Gaufridy] considered a saint by all, to be the prince of witches and having made her a witch."[74] The sensational coverage by the press likely reinforced the public zeal for hunting of heretics. The 53-point forced confession of Gaufridy, printed in the Mercure français, held that the priest confessed to a range of heresies including making a pact with the devil, of receiving the mark of the devil, and "ravishing" Madeline.[75]

Summary

The rise of an experimental science brought about a change in the criteria of knowledge, a shift from the traditional authority of the Scriptures to the experience of individual observers. The church, faced with the Protestant Reformation and a new science, sought to restore

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[74]Peiresc to Malherbe, 22 Feb 1611, PM 60-61.

[75]Mercure français (1611) 1: 18-23.

its power and authority through censorship and the Inquisition. A system of censorship, which was to affect all levels of society, was plagued with rivalries between the various censoring institutions. The medical faculty maintained traditional practice by pursuing Protestant physicians and condemning chemical treatments. The theologians of the Sorbonne and the magistrates of Parlement, already at odds over loyalty to the pope or king, sought control of the book trade. Furthermore, Huguenot publishers in Holland provided an outlet for French language texts.

The rivalries among censoring agents, the changing definition of heresy, dual roles of magistrates--as promoters and prosecutors--thwarted efforts to establish the uniform enforcement of laws. The final decision to grant a permit to publish or condemn a text was not solely a function of its perniciousness. Other factors were involved--social status and selection of the censor. The lack of well-defined guidelines for identifying the heretical text caused confusion. Many natural philosophers developed strategies of evasion to circulate questionable texts.

CHAPTER 4
EVASION

With public channels of communication controlled by censors, natural philosophers devised remedial strategies to communicate their views. They dissimulated ideas under the "mask of religion"[1] and the protection of a patron, or they limited exchanges to personal correspondence networks and private academies. Other individuals disguised meanings with codes. When the Protestant Henry Justel cited works as dangereux, he effectively indicated that certain texts should be acquired and read![2] Peiresc and Gassendi restricted their views on the heliocentric system to letters.[3] Some natural philosophers dissimulated their private views from fear or persecution by censors or ridicule by colleagues. Galileo wrote Kepler on 4 August 1597 that even though he supported the Copernican system, he taught only the Ptolemaic system at the University of Padua: "I have converted to the Copernican doctrine . . . I have not dared publish . . . if Copernicus, our master,

[1]Paolo Sarpi to Groslot de l'Isle, 26 May 1609, quoted in David Wootton, Paolo Sarpi, Between Renaissance and Enlightenment (Cambridge: Cambridge University Press, 1983), 112.

[2]Harcourt Brown, foreword to The Collection Boulliau (BN, FF. 13019-13059) by Robert A. Hatch (Philadelphia: American Philosophical Society, 1982), xiv.

[3]Gassendi to Peiresc, 26 Feb 1632, PL 4: 259.

is assured immortality by some, on the other hand [he] has been exposed (so great is the number of fools) to the derision and contempt of others."[4] Only in 1613 did Galileo publicly acknowledge support for the new system in his Letters on Sunspots.[5] He wrote in the vernacular to allow access by a general reading public.[6] This use of dialect[7] also enabled Galileo to delay criticisms from foreign critics, notably the German Jesuit Christopher Scheiner, who read only Latin.[8]

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[4]René Taton, "Le rôle des correspondances scientifiques dans la diffusion de la science au xvii et xviii siècles," Proceedings of the International Congress on the History of Sciences (Tokyo: Science Council of Japan, 1974), 217.

[5]Stillman Drake, Discoveries and Opinions of Galileo (Garden City, NY: Doubleday, 1957), 85.

[6]Galileo to Paolo Gualdo, 16 July 1612, quoted in Drake, 84.

[7]Galileo's publications in the vernacular were not addressed to a general public but to elite members of society. According to Biagioli, the use of vernacular was a rhetorical style that enabled Galileo to "display spontaneity and unaffected wit to attract an upper-class audience weary of an increasingly rigid baroque court etiquette." Mario Biagioli, "Galileo the Emblem Maker," Isis 81 (1990): 237.

[8]Elizabeth L. Eisenstein, The Printing Press as an Agent of Change: Communications and Cultural Transformations in Early-Modern Europe (Cambridge: Cambridge University Press, 1979), 653.

The Role of Gatekeepers in Evasion

The role of gatekeepers in disseminating scientific information was critical in a period of censorship. Gatekeepers read and communicated information,[9] and arranged for translations and publications of condemned works. Among the more notable gatekeepers were Peiresc and Elie Diodati, who served as intermediaries between scholars in Italy and France. Peiresc acquired censored books such as the mystical philosophies of Italian naturalists Girolamo Cardano and Francesco Patrizi[10]--books that he described as difficult to obtain even from Holland.[11] After Campanella's release from the prison of the Spanish Inquisition in Naples,[12] Peiresc arranged for him to visit in France and to be received in Parisian circles. He also sent copies of Galileo's condemned Dialogue to Holland.[13]

Diodati, with influential ties in Europe, played an important role in the communication of censured texts. A

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[9]E. John B. Allen, Post and Courier Service in the Diplomacy of Early Modern Europe (The Hague: Martinus Nijhoff, 1972), 6.

[10]Peiresc to Gassendi, 26 July 1626, PL 4: 183.

[11]Peiresc to the Brothers Dupuy, 9 June 1628, PL 1: 627.

[12]Pope Urban VIII negotiated for the release of Campanella with the Spanish king in 1626. Campanella did not visit France until 1634. MC 2: 170.

[13]Peiresc to Hortensius, 24 Jan 1634, MC 4: 10. Hortensius only received his copy from Peiresc the following summer. MC 4: 164.

social gadfly and Galileo's confidante, Diodati has been described as "ready to please his friends or the interest of science, to use trickery with the Index [of Prohibited Books] or to tackle the Inquisition."[14] He corresponded with Francis Bacon following his trip to England in 1619[15] and circulated Galileo's texts after meeting the Italian.

From Paris, Diodati arranged for a Latin translation[16] of two works supporting the Copernican system to be published by Mathieu Bernegger in Strasbourg, Germany, in 1635. Under the pseudonym of David Lotaeus, Diodati translated Galileo's Dialogue of Two Chief World Systems along with a 64-page treatise (Lettera, 1615) by the Carmelite priest, Antonio Foscarini.[17] Foscarini's text had been condemned in 1616. Latin translations made these

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[14]René Pintard, Le libertinage érudit dans la première moitié du xviie siècle (Paris: Boivin, 1943; repr. Geneva: Slatkine, 1983), 131.

[15]MC 1: 171.

[16]The Dutch publishing house of the family Elsevier in Leiden financed this edition in Strasbourg. MC 5: 82.

[17]See Peiresc to Diodati, 7 Feb 1634, MC 4: 32-33; MC 5: 272-273; Foscarini's work was condemned following the Injunction of 1616 which prohibited discussion of the Copernican propositions as a real system. The publication On Revolutions by Copernicus was suspended pending corrections to be made in the text--changes that would present the system as hypothetical. Drake, 219. By 1617, Foscarini was dead and his publisher, Lazaro Scoriggio, imprisoned in Italy. At that same time, the Dutch publishing company of Willem Blaeu issued a third edition of Copernicus's book. Eisenstein, 676.

works more accessible to many (non-Italian-speaking) scholars.

In January 1634, Gassendi informed Peiresc that the translation of Galileo, which was published at Diodati's request, was well under way.[18] Two weeks later, he alluded to the problems of censors. "I am pleased with the favor you show him [Diodati] in sending your copy of Foscarini," Gassendi wrote, but cautioned that "Bernegger does not mention that you sent it."[19] Gassendi also asked if Diodati knew that Foscarini's book was condemned; notice of the sentence was carried in Mersenne's book.[20]

Copies of the translation were probably shipped from Strasbourg to the astronomer and Hebrew scholar Wilhelm Schickard in Tübingen[21] and to Diodati in Paris. Mersenne informed Peiresc on 1 July 1635 that he had received one of 350 Latin versions that arrived in Paris.[22] On 10 July 1635, Peiresc wrote the Brothers Dupuy,

> I will be pleased to have a copy of the Latin Version of Galileo . . . and will be careful not to send it to Italy or publish it until I am certain that there is nothing more to hope for his [Galileo's] relief from

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[18]Gassendi to Peiresc, 1 Jan 1634, PL 4: 406.

[19]Gassendi to Peiresc, 11 Feb 1634, PL 4: 458.

[20]Gassendi to Peiresc, 11 Feb 1634, PL 4: 459.

[21]The printer Bernegger served as an intermediary in some exchanges between Peiresc, Gassendi, and Schickard. Peiresc to Bernegger, 31 March 1636, PL 7: 604.

[22]Mersenne to Peiresc, 1 July 1635, PC 2: 550.

> Rome . . . if the book of Galileo's can be sent by the ordinary post in two or three packets, there will not be a great danger to run.[23]

Peiresc received his copies of the Latin translation on 31 July 1635.[24] While he disseminated copies of the works condemned by Rome, he also exchanged several letters with Cardinal Barberini in which he asked for a mitigated sentence for Galileo, and solicited the help of Roman cardinals in organizing observation stations for the lunar eclipse on 28 August 1635.[25]

Strategies of Evasion

Although censorship in France was plagued by ineffectual control, natural philosophers used strategies of evasion to disseminate their views. Publications of radical works or forbidden texts was arranged by Huguenots established in Protestant border states. Confidences were restricted to letters or to texts transmitted by trustworthy friends.

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[23]Peiresc to the Brothers Dupuy, 10 July 1635, PL 344-345.

[24]Peiresc to Brothers Dupuy, 31 July 1635, PL 3: 350.

[25]Peiresc's letters to Barberini and the organization of observation stations are discussed in chapters 5 and 6.

Emigrés

With French communication channels controlled by censors, Protestant border states developed an important publishing industry.[26] The emigrés played a critical role in the dissemination of condemned texts and served as liaisons between France and Holland. The French philologist Joseph Juste Scaglier and Hellenic scholar Claude Saumaise settled in Leiden to escape religious persecution. Even René Descartes moved to Amsterdam to continue his work out of reach of censors. Saumaise was instrumental in arranging for publication of numerous manuscripts.[27] Writing from Leiden, he said that should he return to France, "I would have to resolve to have, henceforth, neither voice nor pen that is free. It is one thing not to say or write what you would like. But to write or say what you do not want is intolerable."[28]

Letters

Letters provided the most efficient means of evading the censors. They might be addressed to a powerful patron such as those Peiresc sent to Barberini to be distributed

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[26]Eisenstein, 409.

[27]Guy Patin to Jacob Spon, n.d. 1643, quoted in Robert Mandrou, From Humanism to Science, 1480-1700, trans. Brian Pearce (Middlesex: Penguin, 1978), 199.

[28]Pintard, 98.

in Rome. Others might be sent through gatekeepers, who often served as "unofficial corresponding secretaries" of the private academies.[29]

At times, correspondents showed prudence in their letters. Following the condemnation of the Dialogue in 1633, Gassendi advised that the packet of letters for Galileo carry "the address of Monsieur Bouchard, advising him of the care needed to convey it by a friend, and to be transmitted by a reliable hand."[30]

Traveling scholars offered another channel through which to send letters and manuscripts. Gassendi visited Father Charles Malapert, who had published a book on sunspots.[31] In 1620, Diodati he first met Galileo in Italy and likely procured copies of his Letter to the Grand Duchess Christina (1615) for distribution in France.[32] Following a subsequent visit in the fall of 1626, Diodati acquired a draft of Galileo's theory of the tides--a theory described by its author as proof of the movement of the

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[29]Harcourt Brown, Scientific Organizations in Seventeenth Century France (New York: Russell and Russell, 1934), 44.

[30]Gassendi to Peiresc, 13 Jan 1634, PL 4: 414.

[31]Gassendi to Peiresc, 21 July 1629, PL 4: 198-202.

[32]This letter was originally written to the mathematician Benedetto Castelli, 21 Dec 1613. Galileo expanded this letter and addressed it to Christina, mother of Cosimo II de Medici. In it, he attempted to reconcile science and religion. Drake, 150.

earth.[33] Peiresc commissioned his brother, Palamède, to visit magistrates, natural philosophers, and collectors. He wrote, "You must see the Messieurs Dupuy and the entire academy . . . the Father Mersenne . . . Father Campanella."[34] He asked his brother to reserve a copy of a book by Campanella which made "a type of apology for Copernicus, according to what I have heard, and for Galileo. Mersenne will tell you about it."[35] Books supporting a heliocentric system were available in France.

Other scholars relied on the diplomatic pouch or influential individuals to communicate across boundaries. A letter from Mersenne to Descartes in Leiden, carried by Constantin Huygens, addressed the problem of censorship, the use of initials or anagrams to disguise signatures, and the need to send information by reliable couriers. Mersenne explained:

> Never have we been more exacting than at present for the examination of books, as Monsieur the chancellor has secret agents to determine what is for [censors of] theology, others for politics, the Academy of Paris for literary works, in poetry and prose, and mathematicians for other works. . . .Use the same channel through the agent [e.g., secretary to the Dutch ambassador] to send me the remainder.[36]

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[33]MC 1: 599, 607.

[34]Instructions to the Sieur de Valavez [Palamède], 8 July 1635, PL 6: 698-699.

[35]Peiresc to Valavez [Palamède], 28 Jan 1626, PL 6: 364.

[36]Mersenne to Descartes, 15 Feb 1637, MC 6: 187-188.

Packets were also addressed to powerful patrons, a strategy Peiresc used to send books to Rome.[37] He explained to Luc Holstenius, his correspondent at the Vatican, that "if the address is not to Mr. the Cardinal [Francesco Barberini], customs will treat it poorly and possibly the inquisitors worse, given that all books pass by their hands if the respect for the Padroni does not stop them."[38] He also debated shipping books through a friend in Rome in a package addressed to Barberini to "avoid customs and censors. . . . But I fear that the cardinal wants to know himself what it could be.[39] At times, Peiresc was more troubled by an inquisitive cardinal than by the power of the Inquisition.

Some patrons, whose names may have carried sufficient authority to allow them to communicate condemned works, used similar strategies. In a letter of 5 August 1574, the Italian humanist Pinelli requested books be shipped through Venice as there he had the "`father inquisitor who is my friend. And he will give me immediately everything that is not truly pernicious in its total substance, which might

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[37]Peiresc to Holstenius, 14 March 1631, PL 5: 364.

[38]Peiresc to Holstenius, 8 June 1629, PL 5: 336.

[39]Peiresc to Holstenius, 8 June 1629, PL 5: 336.

not be the case with other inquisitors.'"[40] Other patrons obtained special permission to read censored books as Peiresc described to Holstenius in Rome: "You can provide yourself in advance with a special permission and license from the Father Maestro of the Holy Palace, or from the Grand Penitentiary."[41]

Rhetorical Strategies

The use of alternative channels of communication was one method available to natural philosophers in disseminating the new science. Rhetorical strategies provided an effective means of publicizing views while leaving the censors uncertain as to the position of the writer. Libertine Gabriel Naudé used pseudonyms, fictitious publishers,[42] and abstruse language, or he relied on a powerful patron (e.g., Cardinal Barberini) for protection from "discerning censors."[43] Other scholars made only allusions to radical ideas. Peiresc, concerned that letters could be intercepted by censors of the Inquisition, omitted several lines from Gassendi's letter

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[40]Paul F. Grendler, "Printing and Censorship," The Cambridge History of Renaissance Philosophy, ed. Charles B. Schmitt (Cambridge: Cambridge University Press, 1988), 53.

[41]Peiresc to Holstensius, 8 June 1629, PL 5: 336.

[42]Henri-Jean Martin, Livre, pouvoirs, et société à Paris au xvii siècle (1598-1701), 2 vols. (Geneva: Librairie Droz, 1969), 1: 179.

[43]Pintard, 465.

to Galileo so as to avoid a misunderstanding by "ill-intentioned and ill-informed people."[44] The concern over the possibility of increased severity of Galileo's sentence was reflected in a letter of 1634, in which Galileo wrote that the "animosity of my powerful persecutors becomes more acrimonious each day."[45]

Either from the fear of censors or ridicule by colleagues, many intellectuals dissimulated their views under the cloak. Scheiner allowed his letters on the sunspots to be published under the pseudonym "Apelles"[46] to avoid involving the Society of Jesus in a religious controversy.[47] In a similar manner, Descartes wrote of his resolve to publish a work anonymously so as to "listen to what is said."[48] Gilles de Roberval attributed his

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[44]Peiresc to Gassendi, 5 Jan 1634, PL 4: 408.

[45]Galileo to Diodati, 25 July 1634, quoted in Guglielmo Libri-Carucci, "Life of Galileo . . . Vie de Galilée," Journal des savants (April 1841): 212-213.

[46]Scheiner maintained that the spots were small planets making transits across the sun, which was a method of saving the Aristotle bias of immutable heavens. William R. Shea, "Galileo, Scheiner, and the Interpretation of Sunspots," Isis 61 (1970): 489-501.

[47]Scheiner gave this reason for the use of a pseudonym in his Rosa ursina (1630), Shea, 498 n. 3. According to legend, Apelles, a painter in the court of Alexander the Great, hid behind a painting in order to hear the candid remarks of viewers. Drake, 82 n. 19.

[48]Descartes to Mersenne, 8 Oct 1629, MC 2: 301.

publication on the heliocentric system to a manuscript by the ancient Greek astronomer Aristarchus.[49]

At times Mersenne's published views forced him to resort to strategies of evasion to avoid problems with censors. He attempted to secure recognition for his book entitled Theological, Physical, Moral, and Mathematical Questions (1634)[50] by dedicating it to the treasurer of France and by legitimizing the study of the Book of Nature as a means of learning about God through his works:

> Those who study the sciences can be unjustly scorned if their methods of advancing the knowledge of God, [the sciences] are not tried . . . [these methods] are like rays of divinity which demonstrate His [God's] immutability, eternity, and greatness by immutable and eternal truths. . . . All Christians should envision the sciences in this manner.[51]

Mersenne's Questions covered topics ranging from practical to theoretical concerns: a method of navigation, implications of the sunspots, the nature of falling bodies (dynamics), and the occult (talismans and magnets). He also included summaries of the first and second days of

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[49]See Robert Lenoble, Mersenne, ou la naissance du mécanisme (1943, repr., Paris: J. Vrin, 1971), 408; and Léon Auger, "Les idées de Roberval sur le système du monde," Revue d'histoire des sciences et de leurs applications 10 (1957): 227.

[50]Marin Mersenne, Les questions theologiques, physiques, morales, et mathématiques où chacun trouvera du contentement ou de l'exercice (Paris: Henry Guenon, 1634).

[51]Mersenne, Dedication, Questions, iv.

Galileo's Dialogue, as well as a copy of the sentence handed down by the Inquisition, as he emphasized, "for the medicine"--an antidote for persecution.[52]

Mersenne was cautious in publicizing his views. Although sunspots could demonstrate that the heavens were subject to corruption, he stressed that "all these observations do not provide evidence that the sun is corruptible and undergoes alterations."[53] Question 34 of Mersenne's work provided arguments supporting and refuting the earth's movement. The Copernican system offered simplicity and economy of motion but according to Mersenne, God did not necessarily select the most efficient movement in the world. Rather, experience seemed to indicate an immobile earth.[54]

Following the publication of his book, Mersenne heard "rumors among the doctors at the Sorbonne that I did not refute the reasons [for the earth's movement]."[55] The complaints from the Sorbonne may have caused Mersenne to revert to more caution in publicizing his views. He

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[52]Mersenne to Peiresc, 28 July 1634, MC 4: 267.

[53]Mersenne, Questions, 138.

[54]Mersenne supported this statement by analogy rather than evidence. "Would it not be simpler," he wrote, "in healing the body to have a hole in the heel where all the superfluous humors should leave, hence avoiding so much medicine?" Mersenne, Questions, 165.

[55]Mersenne to Peiresc, 28 July 1634, MC 4: 267-268.

substituted the questionable discussions with topics "more appropriate for Rome."[56] For example, he exchanged his original question 34, "What reasons are there to prove and persuade that the earth moves around its axis in 24 hours?" with "Can we invent a new science of sound?" Question 37 originally read, "What reasons can we have to believe the earth moves around the sun, which is at the center of the world?" The meaning changed in the revision: "How high above the earth or sun do we need to go to see as much space as desired?" He substituted a discussion of Galileo's attack on the Aristotelian cosmology with the question, "What force is needed to carry a voice from earth to the firmament?"[57] One version of Mersenne's book circulated in France and another in Italy. In both versions, Mersenne printed a copy of Galileo's sentence, a tactic he frequently used to imply recognition of the church authority while he communicated unorthodox views.

The rise of an experimental science emphasizing the use of observation and inquiry to gain knowledge led many clerics to differentiate between knowledge and certainty gained through divine revelation and reason. Mitigated scepticism held that a knowledge of appearances could be gained through reason while truth and certainty about the

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[56]Mersenne to Peiresc, 28 July 1634, MC 4: 267-268.

[57]See MC 4: 75, 270-271.

real world only through divine revelation. Knowledge based on sensory perception revived an ancient debate concerning the reliability of sensory data.[58] Although the "Book of Nature" offered a means of knowing God through His works, investigations of nature did not provide indubitable truths.[59] In one of his publications, Mersenne stated that he would leave certain phenomena unexplained "until God reveals them to us. For example, if the earth or the sun is the center of the universe, [or] if the universe has a center."[60] Five years after the condemnation of Galileo's Dialogue, Mersenne asked one Protestant correspondent if the movement of the earth and immobility of the sun were contrary to the Scriptures.[61] His correspondent responded, "The Holy Scriptures were not made to teach us [natural] philosophy or mathematics."[62]

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[58]Richard Popkin, The History of Scepticism from Erasmus to Spinoza (Berkeley: University of California, 1979), xii-xxii.

[59]Popkin, 130-133.

[60]From his book, Questions inouyes--unknown questions--Question 17. MC 3: 284.

[61]Mersenne to Rivet, 20 Nov 1638, MC 8: 222.

[62]Rivet to Mersenne, 20 Dec 1638, MC 8: 239.

Retraction

Retractions and disclaimers provided other means of articulating a condemned view under the guise of supporting traditional authority.[63] As a precautionary measure in publishing Copernicus's On Revolutions in 1543, the printer Andreas Osiander inserted a disclaimer in the ad lectorum, which stated hypotheses were not true but provided a means of explaining or "saving phenomena."[64] Renaudot held a public conference on the mobility of the earth at his Bureau d'adresse on 24 October 1633, four months after Galileo's sentencing by the Inquisition. He then printed a lengthy retraction of this discussion in his newspaper of 5 January 1634, a means of calling attention to the heliocentric theory.[65] In his paper he described the theory as a "false doctrine . . . [which held the] sun was the center of the world and immovable, that the earth was

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[63]Brown, Scientific Organizations, 37-38.

[64]This view of "saving phenomena" was known as fictionalism or instrumentalism. It held that a theory or model was evaluated on the basis of explanation of phenomena and simplicity. This position had implications for the status of the sciences. While theology dealt with causation, astronomy concerned only explanations and predictions. Hence, epicycles, eccentrics, and deferents were not viewed as real, but as a means of saving phenomena. Michael J. Crowe, Theories of the World from Antiquity to the Copernican Revolution (New York: Dover Books, 1990), 70-72.

[65]See Appendix B, Sentence of Galileo.

not [the center] but had a diurnal movement."[66] Although the use of a retraction gave the appearance of unknowingly encouraging discussion of a condemned topic, Renaudot probably learned of the sentence when it reached the French intellectual circles in mid-August.

Mersenne[67] also used a form of retraction to introduce new hypotheses.[68] He prefaced a discussion of the works of the English Chancellor Francis Bacon by describing the author as a "heretic," cautioning readers that they risked loss of salvation.[69] On occasion, he introduced a discussion of Galileo's observations of the stars, the satellites of Jupiter, and the sunspots by warning of the dangers of the Copernican system.[70] When the Congregation of the Index condemned the two propositions of the Copernican System (1616) as contrary to the Holy Scriptures,[71] Mersenne suggested that although telescopic

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[66]Renaudot, Relations, 5 Jan 1634: 530-532.

[67]Mersenne's early works (1620-1625), such as Questions in Genesis and the Impiety of Deists, Atheists, and Libertines, indicated his personal condemnation of unorthodox views. However, within ten years, many of his former adversaries, such as Campanella and Galileo, became his correspondents.

[68]Brown, Scientific Organizations, 37-38.

[69]MC 1: 169.

[70]Brown, Scientific Organizations, 37.

[71]These propositions are as follows: (1) That the sun is at the center of the world and immobile was declared "foolish and absurd in philosophy and formally heretical inasmuch as it expressly contradicts the doctrine of Holy Scripture in many places." (2) The proposition that the

astronomy could be pursued, the theological implications of observations should not be publicized:

> It is not the intention of the censors to prevent the determination of eclipses and the movement of heavenly bodies by the Copernican method, since this action does no harm to the Scriptures and is not contrary to their [the Inquisition's] decision. And if scholars were to proceed with more discretion and prudence in the sciences, they would not be so subject to censorship and would have no occasion to complain or retract.[72]

Dialogues

The use of interlocutors provided a persuasive means of advancing unorthodox views under the guise of a debate, making it more difficult for censors to determine the writer's point of view. By presenting opposing points of view, the dialogue was constructed to demonstrate that the truth would emerge through debate.[73] Mersenne used this strategy in his dialogue among an alchemist, a Christian, and a sceptic (Truth of the Sciences, 1625), which has been described as making "the unity of his thought obscure and

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earth is not the center of the world and rotates and revolves was declared to come under the "same censure in philosophy and, from a theological standpoint, is at least erroneous in the faith." John L. Russell, "Catholic Astronomers and the Copernican System after the Condemnation of Galileo," Annals of Science 46 (1989): 366.

[72]Brown, Scientific Organizations, 37.

[73]Steven Shapin, "Pump and Circumstance: Robert Boyle's Literary Technology," Social Studies of Science 14 (1984): 503.

the arguments unreal."[74] Galileo stated that the purpose of his Dialogue was to demonstrate that the Italians were knowledgeable of the Copernican propositions.[75] By identifying the two chief systems as the Copernican and Ptolemaic, Galileo created a straw man, which he could more easily attack than the Tychonic position upheld by the Jesuits at this time.[76]

Renaudot published the proceedings of his conference on the movement of the earth under the guise of a dialogue among three individuals. The Aristotelian pointed out that projectiles and cannon balls fall vertically, that both cities and the surface of the earth could not withstand motion, that the heat of the air caused by movement would suffocate all life on earth, and that the Scriptures held otherwise:[77]

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[74]Brown, Scientific Organizations, 38. Historians Steven Shapin and Simon Schaffer have described the dialogue as a "piece of theatre that exhibited how persuasion, dissension and, ultimately, conversion to truth ought to be conducted." Steven Shapin and Simon Schaffer, Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life (Princeton, NJ: Princeton University Press, 1986), 74.

[75]Galileo Galilei, Dialogue Concerning the Two Chief World Systems, trans. Stillman Drake (Berkeley: University of California Press, 1967), 5.

[76]Stephen Toulmin and June Goodfield, The Fabric of the Heavens: The Development of Astronomy and Dynamics (New York: Harper & Row, 1961), 186.

[77]Eusèbe Renaudot, ed., Conference 10, "Of the Motion, or Rest of the Earth," Another Collection of Philosophical Conferences of the French Virtuosi, trans. G. Havers and J. Davies (London: printed for Thomas Dring and John Starkey, 1665), 58-59.

> Decorum and symmetry of the universe require that everything be placed according to its dignity. But the earth, being the most ignoble and base of the elements, which yield to the dignity to the Heavens, should be consequently in the lowest place, the center of the world.[78]

Another participant used analogy and familiar examples to support the Copernican propositions, comparing the central position of the sun to that of God:

> The center, being the most noble place, is therefore the proper place for the most noble body of the world, the sun. As the heart is located in the midst of man, so it is that the sun be placed in the midst of the universe. . . .Nor do we place the candle in a corner but in the middle of the room.

Hence, participants did not offer empirical support for their positions. Instead, they appealed to common sense through analogies with experience on earth.

Dedications

Dedication to a patron often led to improved social status and provided protection from censors. The dedication of The Sidereal Messenger to the Medici enabled Galileo to improve his social status and avoid problems with the church. But his encounter with the Inquisition in 1633 resulted, in part, from changing patronage relationships.[79] After the death of his patrons, the

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[78]Eusèbe Renaudot, ed., Conference 10, 58-59.

[79]Galileo's patronage problems will be discussed in Chapter 6. Mario Biagioli, "Galileo's System of Patronage," History of Science 28 (1990): 15-17.

Medici family refused to finance his daily expenses[80] and to protect him from the Inquisition.

Mersenne dedicated a book on musical harmony to Peiresc.[81] While dedication to a scholarly patron offered some protection from censors, it introduced new problems. Peiresc was more demanding and less inclined to flattery than patron princes. Peiresc wrote, for example, that he wished he had seen Mersenne's work prior to publication "to dissuade him . . . or at least have him temper the terms, so that Sieur Galileo does not find him ill-willed, and as a result, me, as he [Mersenne] dedicates his work to me."[82]

A similar strategy was used by a professor of mathematics and astronomy in Caen. François-Gilles Macé dedicated his treatise on the comets of 1618 to the Chief Justice of the Parlement of Normandy, Alexandre de Faulcon, who then would appear "among famous men as the most brilliant of the stars in the firmament."[83] This text not only discussed Galileo's observations but criticized the Aristotelian cosmology. By dedicating this work to a royal

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[80]Libri-Carucci (April 1841): 209.

[81]Peiresc wrote that he was sending money to the printer. Peiresc to Mersenne, 8 July 1634, MC 4: 236.

[82]Peiresc to Luillier, 28 Aug 1635, MC 5: 363.

[83]H. Prentout, "François-Gilles Macé: Un professeur de mathématiques à l'Université de Caen au commencement du xvii siècle," Mémoires de l'Académie nationale des sciences de Caen (1911): 8-9.

appointee, Macé hoped to smooth difficulties between the Parlement and university and to ensure the protection of his work.

Religious Influences on Science

Censorship affected the communication of scientific initiatives and explanations of natural phenomena. The Aristotelian and Christian framework permeated social order and had implications for the direction of science.[84] Mersenne's mechanism was initially motivated by the need to keep God in the scheme of things. Gassendi integrated Christianity with an ancient Epicurean philosophy.[85] Jesuit natural philosophers interpreted nature through symbols. What appeared to be deficiencies in Jesuit science arose from the need to show obedience to the church.[86] Other clerics presented discoveries and observations in terms acceptable to the church. Scheiner

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[84]Ashworth has examined the influence of religion on the work of individual Catholic scientists and in religions orders. William Ashworth, "Catholicism and Early Modern Science," God and Nature: Historical Essays on Encounters between Christianity and Science, ed. David C. Lindberg and Ronald L. Numbers (Berkeley: University of California Press, 1986), 136-166.

[85]Gassendi held that God created and ordered a world of atoms while the Greek philosopher Epicurus maintained that atoms were eternal. Furthermore, Gassendi maintained the existence of both a material and an immaterial world--one of atoms and one of angels and a God. Lynn Sumida Joy, Gassendi the Atomist, Advocate of History in an Age of Science (Cambridge: Cambridge University Press, 1987), 179.

[86]Ashworth, 159.

maintained that the sunspots were caused by the shadows of stars.[87] Clerics Jean Tarde (Bourbonia sidera, 1620) and Charles Malapert (Oratio, 1620)[88] identified them as planets. Describing sunspots as shadows or planets allowed these clerics to support the Aristotelian tradition that held the celestial bodies were not subject to corruption.

By limiting astronomy to telescopic observations of eclipses or selenography,[89] many clerics avoided a confrontation with the church as they did not pursue the theological implications of observations. Furthermore, the study of the Book of Nature offered a means of understanding its author--God. Peiresc used this argument to ensure priests made the observations he requested. He wrote the missionary Célestin that "the book of nature is the book of books, and there is nothing so conclusive as the observations of things . . . where the greatness of God appears greater and is capable of raising our spirits."[90]

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[87]MC 2: 516. Scheiner's later work, Rosa ursina (1631), discussed the nature of sunspots and the tilt of the axis of the sun, and provided drawings of observations. Scheiner's book, dedicated to the Orsini family, did include attacks on Galileo. Drake, 152, 232.

[88]MC 2: 516-517.

[89]Albert Van Helden, "The Telescope in the Seventeenth Century," Isis 65 (1974): 53.

[90]Peiresc to Célestin, 29 April 1635, PL 7: 856-857.

Summary

The threat of censorship quelled much public discussion of revolutionary views. But scholars devised numerous methods to communicate their views along official and private channels of communication. Through rhetorical strategies, diplomatic pouches, traveling scholars, or protection of a patron, natural philosophers exchanged condemned works with little fear of reprisals.

CHAPTER 5
PEIRESC, PATRON OF SCIENCE

Patronage offered protection from censors, a means of legitimizing scientific activity, and a way to secure cooperation in astronomical observation. Trifles and gifts were exchanged for social status or information. On one occasion, Peiresc asked a priest to send orange flower water to a Mr. Gault "to win and somewhat mollify the coarseness of his Arabic temper and to allow me to see his three antique bronze vases . . . as for the little [Angora] cats . . . might it not be better to send them to Gault to capture his kindness?"[1] In letters to other correspondents, Peiresc asked for a telescope to be given to an able priest[2] or inquired about celestial observations to be made from pyramids.[3] Such requests for information or services passing through the correspondence networks might be rewarded by gifts of instruments, introductions into elite circles, or a patronage position.

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[1]Peiresc to Guillemin, 22 Nov 1632, PL 5: 61-62.

[2]Peiresc to Magy, n.d. 1633, PV 6.

[3]Peiresc to Agathange de Vendôme, 28 May 1635, PV 141. See Appendix C, Instructions from Peiresc to Missionary Priests.

The patronage system was an important component in the development and dissemination of scientific activity. Family wealth and social status enabled Peiresc to legitimize scientific activity. Galileo, however, sought to enhance his own status and prestige through patronage. The dedication of a unique book to the Medici family enabled him to leave the university setting and obtain a position in the court of a prince. Peiresc's used patronage to establish a program of applied astronomy and secure compliance for requests for telescopic observations.

Arrangement of Patronage Positions

Peiresc advised clients seeking patronage positions to establish trust by sharing "some little sample of your study or your observation [but] to stay on one's guard and do not confide in all kinds of people."[4] The arrangement of a patronage position took time. Letters of introduction were followed by an exchange of gifts and, on occasion, the dedication of a book or instrument. When Peiresc sought to place one client with cardinals in Rome, he provided the following advice:

> To avoid discussion of God and the pope in good or bad terms, to dress in long clothing to become more venerable, and to avoid expenditures and debauch; to

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[4]Peiresc to Holstenius, 2 Oct 1631, PL 5: 382.

> frequent the French as little as possible, and with the Italians, . . . never take up games or women; . . . show deference and respect.[5]

This advice was intended for Jean-Jacques Bouchard, who was notorious for "sexual obsession," disbelief, and corruption of innocent minds. Peiresc told Bouchard, "[Y]ou would do well not to reveal yourself to anyone [in Rome] . . . so as not to give any excuse to those inclined to ill will, and this will reduce the cause of jealousy."[6] Both Peiresc and the Brothers Dupuy had recommended Bouchard to Cardinals Bentivoglio and Barberini as a man of "virtue," of "high morals, and of very agreeable conversation."[7] Bouchard likely followed Peiresc's advice or used discretion in his interactions as he gained esteem in Rome and became secretary of Latin Letters for the Vatican.

The successful placement of clients in prestigious circles improved Peiresc's influence and demonstrated his personal prestige. Peiresc asked the Brothers Dupuy to assist Minuiti in exchange for services he had rendered--the Egyptian artifacts and the books and "unique objects"

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[5]Jean-Jacques Bouchard, Les confessions de Jean-Jacques Bouchard suivies de son voyage de Paris à Rome en 1630 (Paris: Isidore Liseux, 1881), 128.

[6]Peiresc to Bouchard, 5 Sept 1631, PL 4: 70.

[7]René Pintard, Le libertinage érudit dans la première moitié du xviie siècle (Paris: Boivin, 1943; repr. Geneva: Slatkine, 1983), 231.

he brought to France[8]--and to grant the same privileges to Gassendi that he enjoyed.[9] Peiresc also placed Holstenius, Bouchard, and Naudé with the papal court in Rome. By obtaining positions for clients in Italy, Peiresc strengthened his personal ties with the Roman Catholic Church, which later facilitated the recruitment of missionary priests for the organization of celestial observation stations in the Levant.[10]

Peiresc was less successful in placing the missionary and Hebrew scholar Gilles de Loches. Peiresc forwarded De Loches's request for a position in Rome to Cardinal Barberini, along with a gift of unusual books. Barberini expressed his appreciation for the gift but did not respond to the letter. The apparent disregard of this request for a position could have reflected adversely on Peiresc's influence in Rome. However, Peiresc justified the absence of a response, explaining that "secretaries of these princes receive their dispatches . . . and choose the most important to which to respond . . . it is possible that by the next mail the cardinal will have had the leisure to

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[8]Peiresc to the Brothers Dupuy, 11 April 1634, PL 3: 78.

[9]Peiresc to the Brothers Dupuy, 28 April 1628, PL 1: 594.

[10]Mario Biagioli, "Galileo's System of Patronage," History of Science 28 (1990): 11.

give more responses."[11] In July 1635, Peiresc discovered the reason for the delays in Barberini's response. "I must tell you about a little inconvenience," wrote Peiresc, "the letter that you addressed to me to pass to His Eminence [Barberini] with the books was left in one of the volumes that I had rebound by my binder."[12]

Gifts

Obviously, small gifts and tokens were exchanged between patrons and clients to ensure loyalty and compliance.[13] Thomas Arcos, a former secretary to Cardinal Joyeuse,[14] provided Peiresc with giants' teeth, medals, turtledoves, and ostrich eggs in exchange for status and financial support.[15] But Arcos's acceptance of patronage did not ensure his submission to Peiresc's desires. He refused to participate in telescopic observations and he converted to Islam. At one point, Arcos expressed his concern that he had lost Peiresc's patronage. "I have not had any letters from Mr. Peiresc and I suspect that the

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[11]Peiresc to de Loches, 30 Jan 1635, PV 112-113.

[12]Peiresc to de Loches, 23 July 1635, PV 148.

[13]Biagioli, "Patronage," 9, 27.

[14]Peiresc to the Brothers Dupuy, 22 Nov 1632, PL 2: 376.

[15]Arcos to Aycard, 10 April 1631, Alexandre-Jules-Antoine Fauris de Saint-Vincens, ed., "Suite des lettres inédites de Peiresc, communiquées par M. Millin," Magasin encyclopédique 5 (1806): 120-121.

change of my habit has made him change his affection and kindness toward me."[16] Arcos could have improved his personal prestige by complying with Peiresc's requests for information. But he found numerous excuses claiming "I do not have the capacity to understand and am sorry I cannot satisfy your curiosity." But he was quick to remind Peiresc of the other services he had rendered, counted among them the 14 chameleons he sent two months earlier.[17]

Dedications

Unusual gifts enhanced the status and prestige of the patron. De Loches sent Barberini rare books on the Islamic religion--books he risked his life to acquire, which could not be touched or owned by Christians.[18] Certainly the dedication of a telescope and newly discovered moons of Jupiter carried more prestige than an obscure translation. Gifts presented to a patron offered many advantages, not least self-advancement for its author and visibility for the recipient. Galileo gave instruments and dedicated discoveries to influential individuals in order to improve his social status. He presented a spyglass that would

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[16]Arcos to Aycard, 15 March 1633, Fauris de Saint-Vincens, 131.

[17]Arcos to Peiresc, 19 Oct 1636, PC 2: 224.

[18]Gilles de Loches to Barberini, 9 Oct 1634, PV 106.

serve military needs to the Venetian Senate in 1609.[19] The following year, he dedicated the first telescopic observations, described in The Sidereal Messenger, to Cosimo II de Medici, Grand Duke of Tuscany. The association of the Medici power and prestige with such a visible emblem as the Jovian moons brought Galileo protection and an improved position in the princely court in Florence.[20]

Patronage or Autonomy?

Although patronage offered many advantages, such as advancement and legitimation of scientific activity,[21] there were also disadvantages.[22] Patronage could result in loss of intellectual autonomy and compromise the main values of the scientific community--communication, cooperation, and the advance of knowledge. Patronage could redirect--or misdirect--scientific activities toward

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[19]Galileo to Leonardo Donato, 24 Aug 1609, Paul-Henri Michel, ed., Galilée: Dialogues et lettres choisies (Paris: Hermann, 1966), 353-354.

[20]See Mario Biagioli, "Galileo the Emblem Maker," Isis 81 (1990): 232; Biagioli, "Patronage," 22-23.

[21]In this period, astronomy dealt with representation of hypothetical systems while theology and physics dealt with reality. Edward Grant, "Late Medieval Thought, Copernicus, and the Scientific Revolution," Journal of the History of Ideas 23 (1962): 197-198.

[22]Clients were pressured to produce unusual gifts to sustain a patronage relationship. Biagioli, "Patronage," 25.

spectacular endeavors.[23] For example, had the Belgian cleric and astronomer Godfrey Wendelin accepted a post in Rome, he would have secured freedom from responsibility but he would have jeopardized his ability to communicate.[24]

As an intimate of elite European circles, Peiresc knew of jealousies and intrigues in papal and royal courts as clients vied for patronage. He had seen the disgrace of his friend and patron Guillaume Du Vair that arose from political machinations in the court of the Queen Regent Marie de Medici. Later, Peiresc alluded to Du Vair's problems in writing that it was more prudent to be a "spectator rather than an actor" in politics. In accepting a court position, Du Vair lost what Peiresc described as "his freedom and comforts."[25]

Scientific Evidence

The descriptions of the pitted surface of the moon, the satellites of Jupiter, and the phases of Venus in The Sidereal Messenger refuted the Ptolemaic scheme and provided propaganda--not evidence--for the Copernican

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[23]Robert A. Hatch, "Books, Experiments, and Poison: Boulliau on Italian Learning and Patronage," Southeast American Society of French 17th-Century Studies, University of South Carolina, Columbia, SC, 4-6 Oct 1990.

[24]Naudé to Peiresc, 30 June 1636, PC 2: 92.

[25]Du Vair encountered numerous problems on assuming his position as Minister of Justice in Paris. Peiresc to Bouchard, 14 July 1632, PL 4: 74.

system.[26] But a heliocentric system could not be supported empirically. There was no perceptible change in the size of planets in the course of their revolutions and no stellar parallax--the fixed stars did not show a change in position. Hence, observations seemed to disprove the movement of the earth.[27] As telescopes were difficult to acquire and manipulate, and as there was no proof of the movement of the earth, Galileo supported his claims with persuasive arguments.[28] In a letter of May 1610, he wrote Belisario Vinta, secretary to the Medici family, that he had lectured on the Medicean stars before a university audience "so enlightened and satisfied that even the highly-placed individuals who had shown such harshness in the attack and refutation of my writings . . . were not only persuaded but ready to defend and uphold my doctrine."[29] In other letters, Galileo referred to impressive concepts such as the "theory of refraction" and

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[26]Albert Van Helden, Introduction, Sidereus nuncius by Galileo Galilei, trans. Albert Van Helden (Chicago: University of Chicago Press, 1989), 10-16.

[27]The absence of parallax could only be explained by infinite space--a concept nearly inconceivable in this period.

[28]Paul K. Feyerabend, "Problems in Empiricism, Part II," The Nature and Function of Scientific Theories: Essays in Contemporary Science and Philosophy, ed. Robert G. Colodny (Pittsburgh: University of Pittsburgh Press, 1970), 321-322.

[29]See Appendix B. Galileo to Belisario Vinta, 7 May 1610.

his numerous observations corroborated by highly placed witnesses. Galileo sought to secure assent for his claims through persuasive strategies rather than through a detailed description of observational procedure and the working of the telescope.[30]

Despite the growing popularity of the telescope, the scientific community was reluctant to accept evidence procured with an instrument.[31] Galileo used a poorly working instrument--a telescope--to make claims contradicting the traditional world-view.[32] There was no theory underlying what Galileo described as his "science of refraction."[33] The inferior quality of the lenses had some clerics dubious of Galileo's claims while others strained to make an observation. The low power of many telescopes,[34] the limited field of vision,[35] and problems of focus made observations difficult if not impossible.

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[30]Feyerabend, "Problems," 322.

[31]Galileo addressed some of these objections in a letter. See Appendix B, Galileo to Piero Dini, 21 May 1611.

[32]Feyerabend, "Problems," 291.

[33]Galilei, Sidereus nuncius, 37.

[34]Ronchi has noted that the typical spyglass was three power while Galileo's telescope was 30. Vasco Ronchi, "Optics and Vision," Dictionary of the History of Ideas, ed. Philip P. Wiener (New York: Charles Scribner's, 1973), 3: 414.

[35]Van Helden, "Telescope," 44.

The publication of Giovanni Baptista Della Porta's Natural Magic (1585) popularized spectacles that let one see "beyond the imagination" and lenses that produced optical illusions.[36] Some clerics refused to look through the telescope, maintaining that it would distort the senses; some believed Galileo put objects in the "tube" and others refused to "see" anything.[37] Finally, the Aristotelian distinction between the supra-lunar and sublunar zones implied that an instrument would not work the same on earth as it would pointed toward the heavens.[38]
For other individuals, Galileo's discoveries shaped their expectations and perceptions of experience.[39]

Astronomy at Aix-en-Provence

Much early telescopic astronomy in France was limited to efforts by clerics, members of Parlement, and nobility

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[36]Ronchi did not give figures but has noted that this work was translated into several languages and had a large circulation. Ronchi, 411.

[37]Albert Van Helden, "The Telescope in the Seventeenth Century," Isis 64 (1974): 51 n. 75.

[38]Paul Feyerabend, Against Method, Outline of an Anarchistic Theory of Knowledge (London: Redwood Burn Limited, 1978), 121. One of Kepler's correspondents wrote that "on earth it [the telescope] works miracles; in the heavens it deceives." Horky to Kepler, 27 April 1610, quoted in Van Helden, Conclusion, Sidereus nuncius, 93.

[39]Feyerabend, Against Method, 160.

to re-produce Galileo's observations.[40] Peiresc learned of Galileo's observations of the Jovian moons[41] in early 1610[42] through Paolo Gualdo, a mutual friend, and an Italian named Pignoria.[43] He received a copy of The Sidereal Messenger that summer.[44] Although telescopes had been manufactured in Holland since 1608, they were expensive and difficult to acquire. In August 1609, Peiresc asked a Parisian collector[45] to send lenses for a telescope.[46] Peiresc received lenses[47] which may have been

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[40]Pierre Humbert, "L'astronomie en France au dix-septième siècle," Conférence faite au Palais de la découverte, 2 February 1952, Paris: 6.

[41]Galileo observed the moons of Jupiter in January 1610.

[42]Stillman Drake, "A Long-lost Letter from Galileo to Peiresc on a Magnetic Clock," A Letter from Galileo, ed. Bern Dibner and Stillman Drake (Norwalk, CT: n.p., 1967), 42.

[43]Pierre Gassendi, Book 2, The Mirrour of True Nobility and Gentility, trans. William Rand (London: J. Streater, 1657), 146.

[44]Humbert, "Joseph Gaultier de La Valette, astronome provençal (1564-1647)," Revue d'histoire des sciences et de leurs applications 1 (1947-1948): 316.

[45]Peiresc referred to the collector only as Monsieur Predesegle. PL 6: 695.

[46]Peiresc to Malherbe, 16 Aug 1609, PM 36-37; Peiresc later wrote Malherbe that he had received the lenses. Peiresc to Malherbe, 9 Dec 1609, PM: 45.

[47]Peiresc to Malherbe, 9 Dec 1609, PM 45. Du Vair acquired a telescope in November 1610, which he gave to Peiresc. Pierre Humbert, "Les astronomes français de 1610 à 1667," Bulletin de la Société d'études scientifiques et archéologiques de Draguignan 44 (1942): 34.

inadequate for viewing, as he did not record his observations until late 1610.

Peiresc and Joseph Gaultier,[48] prior of La Valette and an experienced astronomer, began telescopic observations in November 1610. On 24 November 1610, Gaultier became the first Frenchman to view the Jovian moons while Peiresc saw them the following night.[49] Peiresc not only re-produced Galileo's observations but discovered a nebula in the constellation Orion, which he described in his journal of observation.[50]

A variety of individuals gathered at Peiresc's rooftop observatory at his home in Aix-en-Provence.[51] Astronomical observations required cooperation. Participants were needed to manipulate instruments, to determine local mean

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[48]Humbert has pointed out that Peiresc first met Gaultier at the Jesuit school at Tournon, probably around 1596, and later heard of him through Galileo. Humbert, "Gaultier," 315.

[49]Observations by Gaultier and Peiresc were made about a month after those by Thomas Harriot in England. Humbert, "Gaultier," 316.

[50]Guillaume Bigourdan, Histoire de l'astronomie et l'observation et des observatoires en France (Paris: Gauthier-Villars, 1918), 21.

[51]Peiresc's telescopic observations have been divided in two periods: 1610-1612 and 1628-1637. This is not an arbitrary nomenclature but has been established by Seymour L. Chapin, "The Astronomical Activities of Nicolas-Claude Fabri de Peiresc," Isis 48 (1957): 13-29, and Pierre Humbert, "Le problème des longitudes entre 1610 et 1666," Archives internationales de l'histoire de sciences (1948): 383-387. Few published letters deal with Peiresc's astronomy of the first period.

time by the altitude and occultation of planets and stars, and to make notations of observations. By training participants in the procedure, by instructing them in what they would view, Peiresc prepared many observers psychologically to validate Galileo's discoveries. Given the poor quality of the instrument, this was a difficult feat.[52] Jean Lombard, who worked for Peiresc, participated as did two of Gaultier's students, Pierre Robert and Jean-Baptiste Morin.[53] Some visitors were invited out of social necessity while others were included to lend credibility to observations.[54] Hence, Du Vair, Chief Justice of the Parlement of Provence, was there. Jacques de Gantez, described as an "observer of little experience"[55] but of great pedigree participated from 12 March to 20 May 1611.[56] Other participants were Elie de Saint-Michel de Vaulbourges, François de Villeneuve, a Hellenic scholar and

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[52]Even as late as 1636, one Dutch astronomer described Jupiter as fuzzy while the moons were barely visible. Hortensius to Galileo, 26 January 1637, quoted in Van Helden, "Telescope," 43, n. 28.

[53]Gassendi, Book 2, 145.

[54]Peter Dear, "Totius in verba: Rhetoric and Authority in the Early Royal Society," Isis 76 (1985): 159.

[55]Gantez participated in the observations between 21 March 1611 and 20 May 1611 and became skilled in the sciences. Humbert, "Astronomes," 38.

[56]Peiresc to Brothers Dupuy, 23 April 1634, PL 3:88. Peiresc later recommended Gantez's son, François, chief justice of the Parlement of Aix, to the Cabinet Dupuy. Bigourdan, 23 n. 1.

member of the Du Vair circle, and Ferréol Flotte de Meaux, one of Peiresc's relatives.[57]

While Galileo made enough observations to prove that the Jovian moons were not stars,[58] Peiresc observed on a regular basis through May 1612 to establish the relative radii of orbits and periods of revolution.[59] Peiresc believed that observations of the eclipses of the Jovian moons from different cities (e.g., Paris, Aix, Cairo) would provide a method of determining terrestrial longitude[60] and establishing religious holidays.[61] The problem of longitude had become increasingly important with European expansion in the sixteenth century. In 1598, Philip III of Spain had offered a lifetime pension to the person discovering a reliable method for determining longitude at

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[57]De Meaux observed 21 Dec 1610. Humbert, "Astronomes," 2.

[58]Pierre Costabel, "Peiresc et Wendelin: Les satellites de Jupiter de Galilée à Newton," Peiresc ou la passion de connaître, ed. Anne Reinbold (Paris: J. Vrin, 1990), 93.

[59]Bigourdan, 29. Costabel has conjectured that Peiresc's observations of the Jovian moons may have provided the accuracy needed by Kepler to formulate his Third Law concerning the relation between the average distance of a planet to the sun and the period of revolution. Costabel, 93-95.

[60]Letter of 20 Sept 1611, Pierre Humbert, "Longitude," 383-384.

[61]Easter was to occur on the first full moon following the vernal equinox.

sea.[62] Navigators and cartographers could only give approximations from readings of the magnetic compass[63] or the astrolabe. They used dead reckoning--estimates based on the ship's log--to determine distances traveled east or west of a port.[64]

Navigation routes between Europe and the Levant were fraught with problems. Peiresc explained:

> The expert sailors . . . complain that their sea charts are erroneous, forcing them to alter the course two points between Malta and Heraklion [Crete], and two points between Heraklion and Cyprus . . . for which they have no explanation except that from Marseilles to Sicily they do not change course; on the return from the Levant they found themselves in the same predicament, their routine for three or four hundred years.[65]

Peiresc claimed that he developed the method of determining longitude by using the eclipse of the moons of

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[62]Chapin, "Peiresc," 15-16. Galileo proposed the method of the Medicean stars to the King of Spain in 1612 and 1616 but was not rewarded with a pension. Galileo later submitted this method to Holland but the arrangements were halted when he was imprisoned by the Inquisition in 1633. Seymour L. Chapin, "A Survey of the Efforts to Determine Longitude at Sea, 1660-1760. Part 2: The Use of Celestial Bodies," Navigation 3, no. 7 (1953): 243, 248 n. 1.

[63]Magnetic variation in two location was proposed as a method of determining longitude in the sixteenth century. MC 1: 207.

[64]Seymour Chapin, "A Survey of the Efforts to Determine Longitude at Sea, 1660-1760," Navigation 6 (1952): 188.

[65]See Peiresc to Holstenius, 2 July 1636, PL 5: 445; Peiresc to Arcos, PL 7: 177.

Jupiter[66]--a phenomena occurring more frequently than lunar eclipses, a method proposed by Hipparchus in the second century B.C.[67] In a letter of 20 September 1611, Peiresc explained how terrestrial longitude could be determined by observing the eclipse of the Jovian moons:

> The movement of the Medicean satellites is so rapid that it could serve in the determination of longitudes on the earth, with my tables giving the ephemerides for all hours of day and night, . . . when you are in the Azores, for example, and see a configuration of these stars which could only occur at a certain hour in Aix, finding them at another hour, you would agree that you are on the meridian corresponding to the difference in hours.[68]

The difference in longitude could be determined by the observation of an eclipse at one location compared with astronomical tables, which indicated the time of the eclipse for another location. But tables were often erroneous.[69] The Origan Tables placed Frankfurt west of Paris.[70] Gassendi frequently indicated "an error in

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[66]Peiresc to the Brothers Dupuy, 9 May 1634, MC 4: 115.

[67]Derek Howse, Greenwich Time and the Discovery of the Longitude (Oxford: Oxford University Press, 1980), 197-198.

[68]Humbert, "Problème," 383-384.

[69]The prime meridian varied with the observer. Tycho Brahe's observations were based on his observatory at Uraniborg. Kepler's Rudolphine Tables were based on data, much of which were collected by Tycho. Gassendi and Peiresc adapted the tables to their meridian at Aix.

[70]MC 1: 213.

tabulis" in the margin of tables.[71] The determination of longitude required not only accurate tables but precise measures of the difference in local mean time. No reliable clocks existed.

To test the method of longitude using the eclipse of the Jovian moons and to determine the location of various cities located in the Mediterranean basin, Peiresc equipped Lombard with telescopes and instructions to make observations from the Levant. Lombard viewed the moons of Jupiter from Malta (5-15 January 1612), Tripoli (4 February-April 1612), and Cyprus before returning to France in May 1612.[72]

The study of the question of longitude could provide a means of legitimizing scientific activity by facilitating navigation and the development of trade routes. Telescopic discoveries would secure theological recognition by demonstrating that a well-ordered and complex universe was proof of a Divine Being.[73] Although Lombard's observations

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[71]Pierre Humbert, L'oeuvre astronomique de Gassendi (Paris: Hermann, 1936), 11.

[72]Pierre Humbert, Un amateur: Peiresc (1580-1637) (Paris: Desclée Brouwer et cie., 1933), 89-90.

[73]Steven Shapin and Simon Schaffer, Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life (Princeton, NJ: Princeton University Press, 1986), 340.

did not provide the necessary precision for determining longitude, this voyage was the first organized expedition for telescopic observations.[74]

This expedition was an unusual endeavor through which a patronage relationship could be initiated. The dedication of tables of planetary tables offered Peiresc a means of negotiating a patronage position with the French crown.[75] Borrowing on Galileo's mythological imagery of Medicean stars,[76] Peiresc commissioned the royal artist Jean Chalette of Toulouse to depict Marie de Medici on Jupiter surrounded by four Medici rulers[77] on the Jovian moons.[78] Overhead, five cherubs carried the planetary orbs. The entire scene was bathed in light from the heavens, which filtered through the crown of France at the top of the drawing.[79] As Gassendi later explained, this dedication offered a means of "recognizing the honor of the

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[74]Peiresc later arranged a patronage position for Lombard as a building inspector.

[75]Many planetary tables were dedicated to patrons. The Alfonsine Tables were dedicated to Alfonso X of Castile; The Prutenic Tables (1551) were dedicated to the Duke of Prussia by Erasmus Reinhold; the Rudolphine Tables of Kepler to the Emperor Rudolph II.

[76]See Biagioli, "Patronage," 17; Biagioli, "Emblem," 232.

[77]Cosimo I, Francesco (father of Marie), Ferdinand, and Cosimo II.

[78]Biagioli, "Emblem," 247 n. 51.

[79]Humbert, Amateur, 88-89.

family in giving the names of two renowned queens, which that house had presented to France, unto two stars: therefore giving the name of Catherine to the outmost planet; to the other, which shines more gloriously than the rest, the name of Marie."[80]

Various reasons have been given for Peiresc's failure to publish his ephemerides. Gassendi suggested that he abandoned plans upon learning that Galileo, his former professor in Padua, intended a similar publication.[81] The eighteenth-century historian Louis Moréri wrote that the "vast erudition of Mr. Peiresc was such that he never finished a work and was never pleased with what he had written."[82] More recently, historians have maintained Peiresc simply lost interest,[83] or have attributed this failure to complete the project to the fact that the tables did not fulfill their utilitarian purpose.[84]

There is another possibility as to why Peiresc did not publish the tables. He valued the pursuit of knowledge and intellectual autonomy over public recognition by such a

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[80]Gassendi, Book 2, 146.

[81]Gassendi, Book 2, 146.

[82]Louis Moréri, ed., Le grand dictionnaire historique ou le mélange curieux de l'histoire sacrée et profane, 10 vols. (Paris: Libraires Associés, 1759), 8: 158.

[83]Humbert, Amateur, 89.

[84]Chapin, "Peiresc," 19.

formidable patroness as Marie de Medici. Peiresc feared that obligations and loyalties created by a patronage relationship would misdirect his work or jeopardize his autonomy. Princely patrons often demanded unique and ostentatious gifts, often to the detriment of scholarly endeavor.[85]

Peiresc received intellectual acclaim and royal patronage in 1618 when he received the title of Abbot of Guîtres for historical research involving claims to the throne of France.[86] This title enhanced his personal prestige, but it also engaged Peiresc in an expensive and time-consuming undertaking, which involved the restoration of a monastery and the establishment of a monastic community.[87]

Interlude

Following a period of intense scientific activity directed toward a method of terrestrial longitude, Peiresc appeared to have abandoned astronomy. From 1616 to 1621,[88]

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[85]Biagioli, "Patronage," 25.

[86]Georges Cahen-Salvador, Un grand humaniste: Peiresc (1580-1637) (Paris: Albin Michel, 1951), 84.

[87]Peiresc received this title around 23 October 1618. PL 5: 16 n. 1. Peiresc received an indult from Pope Urban VIII (22 February 1625), through the cleric Christophe Dupuy, to restore the abbey. PL 1: 48-49 n. 2.

[88]Du Vair died in 1621. Peiresc remained in Paris until 1623.

Peiresc lived in Paris where he continued his duties as magistrate and acted as secretary to Du Vair, who was the newly appointed Minister of Justice.[89] He frequented prestigious intellectual circles, establishing contacts with individuals who later assisted in the organization of telescopic observations throughout Europe and the Levant. At the Cabinet Dupuy, he met scholars of diverse political and religious affiliations, among whom were Mersenne, Bouchard, Naudé, and Holstenius.[90]

But Peiresc was not always discerning in his choice of friends. As one biographer has pointed out, "There were often schemers, courtesans, even enemies of Du Vair, who adapted this disguise [of a friend] to enable them to more easily spy."[91] Du Vair was disgraced within six months of assuming his position as Minister of Justice, a victim of the intrigues of the royal court. He was later reappointed after the murder of Marie de Medici's minister, Concino Concini.[92]

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[89]Sharon Kettering, Patrons, Brokers, and Clients in Seventeenth-Century France (New York: Oxford University Press, 1986), 37.

[90]Pintard, 92-94.

[91]Cahen-Salvador, 79.

[92]Jules-Marie Priou, "Magistrat et citoyen français," Les fioretti du quadricentenaire de Fabri de Peiresc, ed. Jacques Ferrier (Avignon: Académie du Var, 1988), 90-91.

Peiresc returned to Aix in 1623 but did not seriously resume his work in astronomy until the late 1620s when he organized observation stations in the Levant. The use of missionary priests as observers was crucial to the success of his work in terrestrial longitude. Missions located near ancient observation sites would enable astronomers to compare their new measurements with those of ancient navigators. Furthermore, priests had the needed training in mathematics.[93]

Scientific Activity

Nearly 16 years had passed since Lombard's expedition and Peiresc had begun the development of the tables of the Jovian moons. Peiresc resumed his plans for work in determining terrestrial longitude with the lunar eclipse of 1628. The observation of the eclipse of 20 January 1628 marked the beginning of intensive astronomical activity at Aix.

The Lunar Eclipse of 20 January 1628

Peiresc's published letters from 1610 through 1628 indicated a continued interest in astronomy but made no mention of the organization of observation stations for the eclipse of 1628. His letters do, however, identify its

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[93]Peiresc and other scholars studied in Jesuit schools where course work related to astronomy consisted of the use of astronomical instruments and tables, planetary theory, mathematics, geometry, and trigonometry.

participants. Claude Mydorge, who studied astronomy and published a book on the use of the astrolabe (1625),[94] observed with Mersenne in Paris,[95] as did the Jesuit Denis Petau, Morin, and the Baron De La Hayes.[96] Peiresc, Gaultier, and Gassendi observed from Aix.

The observations of the lunar eclipse of 20 January 1628 enabled Provençal astronomers to determine the difference in longitude between Aix and Paris. These results were sent through the correspondence networks in Europe: Petau wrote Wendelin in Belgium.[97] Gassendi sent the results to Galileo via Jerôme Aleandro and Holstenius in Rome.[98] Peiresc wrote Wilhelm Schikard in Tübingen.

Peiresc was a powerful patron with ties in elite European circles. His name alone would lend credibility to scientific claims. But he used other strategies to gain acceptance for his observations. He sent memoirs detailing the results of observations and identifying witnesses. Witnesses of high social status attested to the observation and secured credibility for the determination of longitude

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[94]MC 1: 213.

[95]MC 1: 132.

[96]Peiresc to the Brothers Dupuy, 26 Feb 1628, MC 2: 28, 29; Peiresc to the Brothers Dupuy, 4 March 1628, MC 2: 34, 35.

[97]Petau wrote Wendelin on 25 Feb 1628, MC 2: 29.

[98]Gassendi to Galileo 2 March 1628, MC 2: 29.

based on evidence from a telescope. The presence of witnesses was crucial to scientific endeavors. Not everyone could participate in observations due to limited space (social and physical) and a shortage of instruments. There was no training or certification program for astronomers. Naming witnesses of high social standing who participated in an observation increased the acceptance of results by the broader scientific community.

In a letter to his protégé Holstenius, Peiresc described the observation of the lunar eclipse of 20 January 1628,

> [W]e computed the difference in longitude of the meridian of Paris and of this city . . . the observation of Paris was directed mainly by Sieur Mydorge, treasurer of France, an exacting man and versed in the most noble areas of mathematics, the Sieur des Hayes,[99] Father Mersenne, Minim, the Sieur Morin, and others.
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> In this city [Aix], the Sieur Joseph Gaultier, doctor of divinity, prior and seigneur of La Valette, grand vicar of the Archbishop of Aix, and the Sieur Gassendi, also doctor of divinity, theologian, and the present provost of the cathedral church of Digne, both good astronomers, if there are any at this time, and all my friends whom I convoked for this experience.[100]

Accompanying a memoir on the eclipse of 1628, Peiresc asked the Dupuys if Mydorge had measured the latitude of Paris; if not, Peiresc asked to have these measurements made in the "presence of good witnesses who are men of

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[99]De La Haye was the brother-in-law of Mydorge. MC 1: 43.

[100]Peiresc to Holstenius, 2 May 1628, PL 5: 274.

letters."[101] He asked Aleandro and Holstenius to send data from Rome. In exchange for this request, he included a memoir on the measurements of longitude between Paris and Aix, which was to serve as a model for reporting data and to secure similar measures from correspondents in Italy.[102]

Séjour at Belgentier

Work on longitude was halted by what Peiresc termed "three scourges"--plague, famine, and soldiers.[103] The plague disrupted the correspondence networks through which Peiresc organized observation stations. Letters and books were kept in quarantine or soaked in boiling vinegar.[104] Peiresc asked his correspondents to wrap manuscripts in "good envelopes with a little pasteboard which resists."[105] Such precaution seemed futile against a disease that ravaged the population. In nearby Carpentras, more than 3,000 people died in November 1628,[106] and in Aix, Peiresc

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[101]Peiresc to the Brothers Dupuy, 4 March 1628, PL 1: 548.

[102]Peiresc to the Brothers Dupuy, 4 March 1628, PL 1: 548-549.

[103]Peiresc to Brothers Dupuy, 2 Sept 1629, PL 2: 177.

[104]PL 2:2.

[105]Peiresc to Brothers Dupuy, 17 Jan 1630, PL 2: 229.

[106]Charles Cottier, Notice historique sur la ville de Carpentras (Carpentras: Devillario, 1827), 133, quoted in PL 1: 741 n. 4.

wrote of 1,500 deaths in May 1630 alone.[107] It is surprising that any activity--not least scholarship--continued in the face of this mortality rate.

Civil unrest followed Richelieu's appointment of royal intendants to local governmental posts, which he planned as a means of securing acceptance for unpopular policies in Provence.[108] Peiresc's ties with the crown through royal patronage and friendship with the elect[109] made him a target of protest movements.[110] He wrote the Dupuys, "[W]e have been constrained from writing to the court and have asked our friends not to write to avoid reproach . . . we risk pillage at any moment . . . [particularly the destruction of] my poor books and papers which they knew were dear to me."[111] Peiresc went to Belgentier, leaving many of his astronomical instruments and books in the care of his bookbinder, Simon Corberan. After an unsuccessful attempt by a mob to sack his property in October 1630, Peiresc wrote that he could not understand that a "particular enemy of our house brought us such calumny . . . to make us suspected by the world, and lose our

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[107]Peiresc to Brothers Dupuy, 3 June 1630, PL 2: 245.

[108]Kettering, 159-160.

[109]Humbert, Amateur, 172.

[110]Cahen-Salvador, 155.

[111]Peiresc to Brothers Dupuy, 18 Feb 1631, PL 2: 266.

reputation,"[112] having served the public for many years. While many of his medals and coins during an earlier robbery, he believed the destruction of his books would be a disservice to the public as they were "for all those who asked."[113]

Cabinet at Belgentier

Peiresc spent three years (approximately from 1629 to 1632) at the family home in Belgentier near Toulon, where he maintained a prolific correspondence despite some interruptions in mail service due to the plague. Peiresc arranged for Gassendi and Holstenius to accompany the French ambassador to Constantinople.[114] Years earlier, Peiresc and the Brothers Dupuy had obtained a position for Holstenius as librarian for the Chief Justice of the Parlement of Paris,[115] and more recently, with Barberini in Rome.[116] But when Holstenius expressed his reluctance to make a voyage for the purpose of telescopic observations, Peiresc changed his tone, "I would like to have your resolution, having trouble persuading myself that you could

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[112]Peiresc to Corberan, 28 Oct 1628, PL 7: 967.

[113]Peiresc to Corberan, 28 Oct 1630, PL 7: 970.

[114]Henri de Gournay, Count de Marcheville, was the French ambassador.

[115]MC 1: 188.

[116]Holstenius arrived in Rome prior to Sept 1627. PL 5: 246.

renounce this task and that you could not find the honorable means of convincing your dear patron to allow you to do so."[117]

Although most of his astronomical instruments were in Aix, he tried to organize observations in Belgentier. The cleric François de Galaup-Chasteuil and Lombard attempted to view a solar eclipse from Belgentier (10 June 1630) with Peiresc. But their view was obscured by the mountains.[118]

The Transit of Mercury, 1631

The astronomers at Aix and Paris sought a method of determining terrestrial longitude and to explain variations in apparent diameters of planets, which they believed were caused by refraction--the bending of light rays by the atmosphere or telescopic lenses. The observation of the transit of Mercury across the sun could confirm Kepler's predictions in his Rudolphine Tables (1627).[119] More importantly, the transit would allow observers to measure planetary diameters by comparing the size of Mercury

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[117]Peiresc to Holstenius, 13 Oct 1630, PL 5: 354.

[118]Gassendi, Book 4, 42.

[119]Albert Van Helden, "The Importance of the Transit of Mercury of 1631," Journal of the History of Astronomy 7 (1976): 1.

against the sun and to gain an understanding of the size of the world.[120]

Kepler predicted the transits of Mercury (7 Nov 1631) and Venus (6 Dec 1631, not visible in Europe) in his Admonitio, which circulated among astronomers throughout Europe. Peiresc invited Gaultier to bring his instruments and observe at Belgentier but Gaultier refused. Peiresc noted, "But there was no way to get anything out of him [Gaultier] . . . to divert him from his [game of] tric and trac, which pleased him more than working his mind as you know."[121] As Peiresc's telescopes were in Aix, Gaultier's refusal to comply left the observers at Belgentier without instruments:

> We did not have any adequate instrument with which to take elevations, or anyone well experienced. This eliminated the possibility of serving the public. As a result, we only watched out of simple curiosity and the pleasure of witnessing this phenomenon.[122]

Visitors came to Peiresc's house to attempt observations of the transit.[123] But pressing obligations--attendance at

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[120]Ptolemy estimated the apparent diameter of Mercury as one-fifteenth that of the sun. Kepler predicted the apparent diameter of Venus as one-fourth that of the sun. Albert Van Helden, Measuring the Universe: Cosmic Dimensions from Aristarchus to Halley (Chicago: University of Chicago Press, 1985), 2, 97.

[121]Pierre Humbert, "A propos du passage de Mercure, 1631," Revue d'histoire des sciences 3 (1950): 29.

[122]Humbert, "Mercure," 29.

[123]Visitors included physicians by the names of Mr. Le Febvre and Mr. Noel. Humbert, "Mercure," 30.

church--and poor weather interfered with viewing. "Unfortunately mass lasted longer than usual," Peiresc wrote, "so that when we went to the study that I had prepared [for observing]. . . we let escape the chance to see a little this morning."[124]

In Paris, Gassendi erected a camera obscura to project the image of the sun onto a paper divided into 60 parts.[125] He wrote, "`I was far from suspecting that Mercury would project such a small shadow . . . I thought rather that it was a spot [approximately two-thirds of one part or 20 seconds] that I had not noticed on the sun a previous day.'"[126] The rapidity of the movement of the spot across the sun convinced Gassendi that it was Mercury--not the slower moving sunspot--and that the planet had a much smaller apparent diameter than predicted by Kepler.[127]

Gassendi, one of the few astronomers to view the transit, sent copies of his observations throughout Europe.[128] In December he published Mercurius in sole

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[124]Humbert, "Mercure," 30.

[125]Van Helden, "Transit," 4.

[126]Pierre Gassendi, Mercurius in sole visus, quoted in Van Helden, "Transit," 4-5.

[127]Van Helden, Measuring, 99.

[128]Gassendi sent copies to Naudé, Scheiner, and Campanella, all in Rome; Gaultier, Aix; Schikard, Tübingen. MC 3: 264 n. 2

visus,[129] in which he outlined his procedure, observations, and personal reactions to the transit of Mercury. In this account, he shared his expectations and invited the reader into his confidence. The detailed description of the use of a camera obscura and observation by projection enabled the reader to "experience" the transit. Gassendi's observations became credible and his conclusions were more compelling. His account of the transit enabled him to ground his claims on personal testimony and on telescopic evidence, and to establish his personal authority as an observer.

Schickard commented that Gassendi would "hardly escape the censure of the critics who will wonder from this if you really did see Mercury and if perhaps a spot did not deceive you into exceeding credulity and favoring of your own opinion."[130] Gaultier, prevented from observing due to cloud cover, had difficulty in hiding his jealousy and assumed a conservative position for the basis of his criticisms:

> I am not surprised that we did not see it [transit], given the small size described by the Sieur Gassendi, which is truly against the wishes and imagination of men experienced in these things . . . but I think that he [Gassendi] has the spot much too black to be a body which is softer and more opaque than the sunspots; which leaves me doubtful at present that this observation is truly of Mercury.

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[129] MC 2: 517-518.

[130] Van Helden, "Transit," 5-6.

There were other astronomers refused to acknowledge Gassendi's observations. Gassendi wrote Peiresc that letters from Galileo and Diodati did not mention the transit as though "these planets [Mercury and Venus] were not in the heavens."[131] Other individuals embellished their own observations, as Gassendi noted: "The Fathers Peteau and Denenne told me the older day that the rector of this city observed the transit . . . [and described it saying] Venus covered two-thirds of the sun, leaving only a crescent as when it is eclipsed by the moon." Gassendi added, "I did not want to laugh out of the respect I have for them."[132] The observation of the transit of Mercury demonstrated that haze made the apparent diameter of the planet appear much larger than its actual diameter,[133] which would explain the larger size predicted by earlier astronomers. Gassendi's observations pointed to the need to reevaluate planetary diameters and distances.[134] The small size of the planet suggested that the world[135] was

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[131]Gassendi to Peiresc, 26 Feb 1632, PL 4: 258-259.

[132]Gassendi to Peiresc, 26 Feb 1632, PL 4: 258-259.

[133]Galileo Galilei, Dialogue Concerning the Two Chief World Systems, trans. Stillman Drake, 2nd ed. (Berkeley: University of California Press, 1967), 360.

[134]Van Helden, "Transit," 8.

[135]At this time, the world consisted of the earth surrounded by the moon, the sun, and five planets. Beyond the planets were the fixed stars.

much larger than previously assumed. His observations also demonstrated his willingness to reappraise traditional beliefs on the basis of telescopic evidence.

Organization of Observation Stations

Peiresc returned to Aix in September 1632, resuming work on the organization of observation stations for the determination of longitude. He planned to "put it into the Cardinal's [Barberini's] head to order missionary priests, skilled in mathematics to observe."[136] Although correspondents were receptive to the project, many were preoccupied by Galileo's recent sentencing in 1633.

Summary

Peiresc disseminated scientific information and organized celestial observations through informal communications networks, which extended from Europe to the Levant. His telescopic observations of the Jovian moons and formulation of tables of planetary movements could have earned him royal patronage. But he preferred to maintain his autonomy rather than compromise his integrity in a patronage relationship. At a time of plague and civil unrest, Peiresc pursued his plan to determine a method of terrestrial longitude. He used the promise of patronage to obtain information, secure participation, and establish astronomy as a legitimate means of gaining knowledge of the

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[136]Peiresc to Brothers Dupuy, 4 March 1628, PL 1: 549.

world. Most importantly, by communicating results of observations and names of witnesses through the correspondence networks, Peiresc hoped to secure recognition for scientific activity by a broader public.

CHAPTER 6
PEIRESC'S USE OF PATRONAGE AND SCIENTIFIC COMMUNICATION

As a gatekeeper in the correspondence networks, Peiresc had the authority to communicate and control the information flow. His ties in influential circles, social status, and use of patronage enabled him to establish contacts with correspondents, to secure compliance for requests, and to legitimize scientific activities. To understand the relationship between patronage, communication, and scientific innovation, this chapter provides a discussion of Peiresc's role in the Galileo affair, his development of a rhetorical site, and his establishment of the Provençal School.

Peiresc and Galileo

In part, the conflict between religion and science concerned the debate over the criterion of truth--in traditional terms, reason or revelation. Many clerics in the church maintained that knowledge of the real world came through divine revelation and study of textual authorities.[1] In contrast, natural philosophers relied on

[1]See Steven Shapin, "Pump and Circumstance: Robert Boyle's Literary Technology," Social Studies of Science 14 (1984): 481, 489-491; Peter Dear, "Jesuit Mathematical Science and the Reconstitution of Experience in the Early Seventeenth Century," Studies in the History and Philosophy of Science 18 (1987): 147-150; Peter Dear, "Totius in verba: Rhetoric and Authority in the Early Royal Society," Isis 76 (1985): 146, 152-154.

the use of reason and experience. Galileo's telescopic observations of the phases of Venus, the pitted surface of the moon, and sunspots (1610-1613) provided evidence, which was obtained by an observer using an instrument. Galileo used various strategies to secure recognition for his observations, including the dedication of The Sidereal Messenger to a patron and the distribution of this text by representatives of the Tuscan court.[2]

More recently, Galileo had published his Dialogue of the Two Chief World Systems in which he claimed to prove the earth's movement by a theory of the tides--a theory which attributed the tides to an uneven movement of land and sea caused by the earth's rotation on its axis and revolution about the sun.[3] Galileo had dismissed the influence of the moon on the tides, a theory proposed by Kepler,[4] and ignored Pope Urban VIII's requests for changes in the text. He expressed many of the pope's concerns through the Aristotelian, Simplicio.[5]

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[2]Mario Biagioli, "Galileo's System of Patronage," History of Science 28 (1990): 23.

[3]Galileo Galilei, Dialogue concerning the Two Chief World Systems, trans. Stillman Drake, 2nd ed. (Berkeley: University of California Press, 1967), 437-439.

[4]Galilei, The Fourth Day, 419.

[5]MC 3: 409.

Galileo's sentence by the Inquisition in 1633[6] was the culmination of a series of conflicts with the church. His book on the satellites of Jupiter and his letters on sunspots provided evidence refuting the Aristotelian world-view. Furthermore, in his Letters on Sunspots (1613), he articulated his support of the Copernican system.[7] In his Letter to the Grand Duchess Christina (1616), he attempted to demonstrate that scientific discoveries did not conflict with the Scriptures, which were written in simple terms for common people.[8] Galileo, protected by the Medici and through his ties with the Accademia dei Lincei, received warnings to temper his attacks on traditional views. One of Galileo's friends wrote, "Cardinal [Maffeo] Barberini[9] . . . would like greater caution in not going beyond the arguments used by Ptolemy and Copernicus [e.g., saving appearances], and finally in not exceeding the limitations of physics and mathematics."[10] Although the Injunction of

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[6]The sentence forced him to recant his support of the Copernican system and confined him to house arrest.

[7]Stillman Drake, Discoveries and Opinions of Galileo, trans., intro., and notes by Stillman Drake (Garden City, NY: Doubleday, 1957), 85.

[8]Drake, 182.

[9]Maffeo Barberini became Pope Urban VIII in 1623.

[10]Giovanni Ciampoli to Galileo, 28 Feb 1615, quoted in Drake, 158.

1616 did not name Galileo explicitly, the Inquisition files revealed that he was prohibited from teaching and publishing on the Copernican system.[11]

The Secrecy of the Sentence

Secrecy surrounded the pre-trial questioning of Galileo, which lasted from February to June 1633. "No one says anything," wrote Peiresc. "I have no letters from those who could speak to me [about Galileo], not even from Cardinal Barberini."[12] Peiresc learned of Galileo's imprisonment[13] in mid-July through letters from Scheiner--letters that he was to transmit to Gassendi (Digne) and the Jesuit Anathase Kircher (Avignon), in the south of France.[14] Peiresc forwarded the letter to Gassendi only on 12 August 1633. He wrote, "You will be pleased to see the esteem he [Scheiner] holds for you, but well mortified to

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[11]Albert Van Helden, "Galileo, Telescopic Astronomy, and the Copernican System," Planetary Astronomy from the Renaissance to the Rise of Astrophysics, Part A: Tycho Brahe to Newton, ed. René Taton and Curtis Wilson (Cambridge: Cambridge University Press, 1989), 97.

[12]Peiresc to Gassendi, 25 June 1633, PL 4: 318.

[13]Galileo was questioned by the Inquisition in April 1633 and was condemned on 22 June 1633 to abjure his beliefs and to remain under house arrest. Francesco Barberini did not sign the sentence.

[14]Armand Beaulieu, "Les réactions des savants français au début du xviie siècle devant l'héliocentrisme de Galilée," Convegno internazionale de studi galileian (Firenze: Giunti Barbera, 1984), 374.

learn what he has said of poor Galileo . . . which should not be divulged . . . as it has kept secret in Rome until the present."[15] The sentence was not publicized in France until it appeared in Renaudot's Relations of January 1634. At first, Peiresc blamed Mersenne for leaking the sentence to the journalist, but later apologized.[16] Mersenne feared that a confrontation between religion and science would "render the truth of the Holy Scriptures ridiculous to the heathens, by using reasons which demonstrate nothing other than their [the clerics'] ignorance and weakness of imagination and mind."[17]

In a letter to the Brothers Dupuy of 16 August 1633, Peiresc minimized Galileo's sentence and mentioned it only as an afterthought. After writing at length about a monk who did not keep promises and a manuscript on the life of Tertullian, he added, "I forgot to tell you, I learned from Rome that poor Galileo had to declare solemnly that he did not support the opinion that the earth moved, yet in his dialogue he used strong reasons to support it."[18]

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[15]Peiresc to Gassendi, 12 Aug 1633, PL 4: 342.

[16]Peiresc later apologized to the Dupuys for blaming Mersenne. Peiresc to the Brothers Dupuy, 6 Feb 1634, PL 3: 28.

[17]MC 4: 411.

[18]Peiresc to the Brothers Dupuy, 16 Aug 1633, PL 2: 582.

The decision to retain the news of Galileo's sentence from the French scientific community might be interpreted in several ways. Peiresc might have believed that the sentence of Galileo was an affair internal to the Roman Catholic Church. After all, the sentence and condemnation had not been promulgated in France. For decrees issued by the Holy Office in Rome to be recognized in France, they had to be sent to the nuncio in Paris and then ratified by the theologians of the Sorbonne. Cardinal Bichi, the nuncio in Paris, had not transmitted the sentence to the Sorbonne.[19]

Peiresc could have viewed this sentence as the result of earlier misunderstandings between Galileo and Jesuit astronomers. Galileo fought Scheiner over the priority of the discovery of sunspots (1611-1612) and later clashed with the Jesuit Father Horatio Grassi over the nature of comets (1618-1623). Galileo later admitted to Diodati (25 July 1634) that had he avoided these confrontations, he could have "written to his fulfillment on all subjects, even the movement of the earth."[20] Peiresc might have withheld the news of the sentence in hopes that the church

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[19]See also MC 3: 452.

[20]Galileo to Diodati, 25 July 1634, Guglielmo Libri-Carucci, "Life of Galileo . . . Vie de Galilée, Journal des savants (April 1841): 213.

would not condemn the Copernican propositions.[21] He stressed that the church often attempted to reconcile positions "carefully and over time rather than carrying things to the extreme and possibly involving too many men who looked for obvious contradictions . . . so many other affairs of great consequence would have amounted to little if one had not proceeded with such vehemence."[22] Peiresc's reluctance to spread the news about Galileo might also be explained by the power gained from delaying the transmission of information.[23]

Mersenne attributed Galileo's problems to a refusal to recognize church authority: "As for Galileo," he wrote, "his condemnation is based particularly on his promise of 1622 [sic][24] not to teach this doctrine against which, as you know, the Scriptures are clear . . . and the church must assure that each does not explain the Scriptures

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[21]The Injunction of 1616 prohibited the defense of the Copernican propositions; in 1633, Galileo was suspected of heresy and hence abjured his errors. His Dialogue was condemned. Van Helden, "Galileo," 102.

[22]Peiresc to the Brothers Dupuy, 6 Feb 1634, PL 3: 28.

[23]This interpretation would raise two questions for further research: what would Peiresc gain from retaining this information and whom was he protecting?

[24]Mersenne referred to the injunction of 26 Feb 1616. MC 4: 37 n. 7.

according to his fantasy."[25] While dialogues offered a rhetorical strategy by which to communicate views, the casting of Simplicio as spokesman for the church made it obvious which position Galileo supported.

The published correspondence used in the present study[26] does not indicate whether Gassendi and Kircher questioned the delays in receiving news of Galileo's sentence. Peiresc appeared confident that his credibility and integrity as a gatekeeper would not be jeopardized by retaining this information. Once the news of the sentence became public, Peiresc wrote, "You can imagine how that has created a stir everywhere and how we find his persecution strange as it was those [censors] who were assigned to read his book who should be blamed."[27]

French Reaction to Galileo's Sentence

Although the condemnation of Galileo's work was not promulgated in France and hence, not officially recognized by the French Catholic Church, the sentence did impose what has been described as a "moral obligation"[28] to respect and

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[25]Mersenne to Rivet, 8 Feb 1634, MC 4: 37-38.

[26]See References.

[27]Peiresc to Holstenius, 2 June 1633, PL 5: 406-407.

[28]John L. Russell, "Catholic Astronomers and the Copernican System after the Condemnation of Galileo," Annals of Science 46 (1989): 367.

uphold the views of the church. Theologians of the Sorbonne controlled channels of communication and held the authority to define acceptable beliefs of natural philosophers, many of whom were priests.

The threat of persecution led many clerics to use self-censorship in their communications. A letter of February 1634 written from Amsterdam showed Descartes's attempt to reconcile his loyalty to the church with his desire to publish:

> I wanted to suppress entirely the treatise that I had done and lose almost all my work of the past four years to give entire obedience to the church as it prohibited the opinion of the movement of the earth. Yet, I have not seen that the pope or the council have ratified this prohibition by the Congregation of Cardinals. . . . I would be relieved to learn what is upheld in France and if . . . [the cardinals'] authority has been sufficient to make it an article of faith.[29]

Descartes also expressed his hope that the church would gradually accept the Copernican position, as shown in this excerpt from a letter: "I have not lost all hope that the same thing will happen as with the Antipodes which were condemned somewhat earlier." He analogized the situation to earlier problems in gaining acceptance for a spherical earth, where people could be 180 degrees away and not fall into the sky.[30]

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[29]Descartes to Mersenne, early Feb 1634, MC 4: 27.

[30]Descartes to Mersenne, around 1 May 1634, MC 4: 98.

Peiresc, Cardinal Barberini, and the Galileo Affair

For many natural philosophers, Galileo's imprisonment demonstrated that the personal friendship and patronage he had earlier enjoyed with princes and cardinals did not ensure protection from censors. Descartes wrote that he could not "imagine that he [Galileo], being an Italian and even in the pope's favor, could be accused for wanting to establish the movement of the earth."[31] Galileo had six audiences with the pope during a six-week visit to Rome in the spring of 1624.[32]

Galileo's problems can be in part attributed to changing patronage relationships.[33] Belisario Vinta, who arranged the patronage position with the Medici after Galileo's dedication of The Sidereal Messenger (1610), died in 1613, and Cosimo II de Medici, in 1621.[34] The death of Prince Federico Cesi in 1630 led to the decline of the power of the Accademia dei Lincei in Roman affairs.[35] Galileo's dedication of the Dialogue to the Medici

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[31]Descartes to Mersenne, 28 Nov 1633, MC 3: 558.

[32]MC 1: 606. Urban VIII reportedly told Campanella that the Injunction of 1616 would not have been issued had he been pope at the time. MC 3: 408.

[33]Biagioli, "Patronage," 15-17.

[34]Biagioli, "Patronage," 15-16.

[35]Biagioli, "Patronage," 17.

represented an attempt to renew ties with this family.[36] With the loss of social status and patronage and problems with the Inquisition, Galileo now turned to his former student for help. He did not write Peiresc directly. Instead, in the fall of 1634 he wrote Diodati who conveyed the request to Gassendi:[37]

> If Monsieur Peiresc, with the contacts he has with Cardinal Barberini, would intercede to obtain . . . his [Galileo's] freedom to go to Florence . . . it would be a memorable act. He could make this supplication without many scruples as he is well-known beyond the mountains . . . [and the] prohibitions for such causes are not observed in France.[38]

Accompanying Galileo's request was a gift of telescopic lenses--a means securing Peiresc's assistance.

Peiresc served not only as a gatekeeper in the correspondence networks, but as an unofficial liaison to the church and Rome. Since he first met Barberini in Italy in 1600, he had cultivated this friendship with a variety of gifts--rare books, exotic plants, and even a gazelle.[39] The cardinal reciprocated by sending artifacts,

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[36]Biagioli, "Patronage," 17.

[37]Peiresc to Jacques Dupuy, 5 Dec 1634, PL 3: 236.

[38]Diodati to Gassendi, n.d., Libri-Carucci, (April 1841): 216.

[39]Pierre Humbert, Un amateur: Peiresc (1580-1637) (Paris: Desclée de Brouwer et cie., 1933), 258.

manuscripts, and papyrus plants,[40] and by appointing Peiresc's protégés to positions in Rome,[41] a means of acknowledging the Frenchman's power in Roman affairs. The exchange of gifts between Peiresc and Barberini were used to sustain friendship, confer honor and prestige, and, on occasion, to solicit favors.

Peiresc made a personal appeal to Barberini in Galileo's behalf on 5 December 1634:

> Forgive my boldness and give me reason to maintain the confidence I have always had in your kindness, to see you undertake several steps to ensure the consolation of an aging man [Galileo], a septuagenarian in poor health. . . .It is characteristic of the human condition to be mistaken on several points . . . and he recanted.[42]

Peiresc stressed that Galileo's imprisonment would harm the reputation of the church and "stain" the papacy. In his response, Barberini told of his projects to have translations made of Gilles de Loches's Arabic texts and described a setiferous plant sent by Peiresc. He only addressed the Galileo affair in passing, "I will not fail to convey your letter about M. Galileo to His Holiness; but

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[40]Peiresc to the Brothers Dupuy, 22 June 1633, PL 2: 550.

[41]Naudé came to Italy as Cardinal Bagni's librarian. His letters to Peiresc indicate his desire to have Barberini as a patron. Bouchard became secretary of Latin Letters and Holstenius, the Vatican librarian.

[42]Peiresc to Barberini, 5 Dec 1634. Libri-Carucci, (April 1841), 218.

you must forgive me if I do not reply in more detail on this point, as although one of the lesser [cardinals], I am among the cardinals assisting at the Holy Office."[43]

Dissatisfied with this response, Peiresc wrote a second letter to Barberini (31 Jan 1635): "Your Eminence has not wearied of sending me such honorable gifts," Peiresc wrote, "or helping friends; hence I would appreciate anything you can obtain from the pope in Galileo's favor."[44] Peiresc asked for a mitigated sentence, warning that Galileo's punishment would be compared to the persecution that Socrates underwent in his own country.[45]

Galileo, who learned of Peiresc's letter from a relative, Roberto Galilei of Lyons, described it as:

> [An] undertaking where so many others who recognize my innocence have remained silent. . . .I do not hope for any relief since I have committed no crime. Had I erred, I could hope for and obtain a reprieve and pardon . . . but against an innocent who has been condemned, it is fitting to maintain rigor that can be disguised as justice.[46]

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[43]Barberini to Peiresc, 2 Jan 1635. Libri-Carucci, (April 1841): 221.

[44]Peiresc to Barberini, 31 Jan 1635. Libri-Carucci, (April 1841): 222.

[45]Peiresc to Barberini, 31 Jan 1635. Libri-Carucci, (April 1841): 221-222.

[46]Galileo to Peiresc, 22 Feb 1635, Paul-Henri Michel, ed., Galilée: Dialogues et lettres choisies (Paris: Hermann, 1966), 422. See Appendix B, Galileo to Peiresc, 22 Feb 1635.

Peiresc's letters to Barberini demonstrated his knowledge of the papal court and his belief that personal loyalties could bring about a change of the sentence of the Inquisition.[47] The extracts of the letters also provided insight into the role of intermediaries in transmitting requests.[48] Diodati served as a liaison between Galileo and French savants while Peiresc provided the connection with papacy. In seeking to obtain a change in Galileo's sentence, Peiresc did not appeal directly to the pope. Instead, he addressed his letters to his friend, Barberini. Had Barberini communicated the contents of these letters to the pope, his action would have transformed Peiresc's request into a personal appeal for a favor.[49]

Barberini's letter indicated that Peiresc sent gifts with his request--a plant from Mecca and the memoirs of Urban V. "I am confused and mortified by all these gifts," the cardinal wrote, and "I renew my desire to serve you."[50]

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[47]Robert Mandrou, From Humanism to Science, 1480-1700, trans. Brian Pearce (Middlesex, UK: Penguin, 1978), 223.

[48]Biagioli, "Patronage," 27.

[49]Biagioli "Patronage" 28.

[50]Libri-Carucci, (April 1841): 221.

Despite the offer to serve, the brevity of Barberini's response indicated an unwillingness or inability to intercede in the Galileo affair.

Peiresc's letter alluded to a disregard for protocol in the proceedings against Galileo. Often a recantation sufficed to absolve an individual of his crime against the Catholic faith. To charge an individual with heresy, the church needed to demonstrate intent and persistence in opposing the faith.[51] As Peiresc emphasized, Galileo recanted.

The few published exchanges between Peiresc and Barberini suggest that Peiresc addressed the cardinal as an intellectual equal and tried to gain compliance for his request for a mitigated sentence through rational arguments. For example, Peiresc wrote that Galileo recanted for his errors and that the church would lose authority if it carried out the sentence. The cardinal seemed bothered by the profusion of gifts and the need to reciprocate or perhaps lose Peiresc's friendship. But his intentional disregard for Peiresc's appeals indicated that he valued his loyalty to the authority of the church over

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[51]Raymond A. Mentzer, Jr., Transactions of the American Philosophical Society: Heresy Proceedings in Languedoc, 1500-1560 (Philadelphia: The American Philosophical Society, 1984), 74: 9.

personal friendship. Had Peiresc succeeded in obtaining a mitigated sentence, he would have increased his personal prestige and power in Roman affairs.

In addition to providing insight into loyalties and obligations between individuals and groups, letters also revealed Peiresc's conception of a science based on empiricism. Peiresc's belief in the importance of the advance of knowledge by the scientific method might explain his desire to defend Galileo, who claimed his theory of the tides was based on observation. Peiresc was critical of those individuals who "want to remain in ignorance, avoiding knowledge of causes, or at least effects in experience."[52] He heralded the publication of the Dialogue as a move from general statements about nature to an attempt to explain phenomena in terms of cause and effect.[53] Gassendi described Peiresc's reaction to the Dialogue:

> When he observed that the book was printed with approbation, with what exaltation he cried out, wherein quick-sighted and sagacious men, by explaining the motion of the earth, had explained the causes both of the properties of the lodestone and the flowing and ebbing of the sea.[54]

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[52]Peiresc to Césaire de Rosgoff, 6 May 1636, PV 230.

[53]Humbert, Amateur, 212.

[54]Pierre Gassendi, Book 4, The Mirrour of True Nobility and Gentility, trans. William Rand (London: J. Streater, 1657), 78.

But his loyalty to Galileo did not compromise his search for proof or refutation of the theory of the tides which he said contained questionable explanations[55] and did not "resolve" the issue of the mobility of the earth.[56] Peiresc maintained that observation would reveal "true causes" and allow "generalizations of the effects" to be formed.[57]

Although he considered Scheiner instrumental in initiating the process against Galileo,[58] Peiresc maintained correspondence with him and inquired about the purchase of a telescope.[59] Many instruments were obtained through the gift-giving ritual, including the telescope Galileo sent to Peiresc and Gassendi in 1634.[60] A gift established dependence and trust, constituting what Marcel Mauss has described as an "irrevocable link."[61] Rather than enter into a similar type of patronage relationship

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[55]Peiresc to Dupuy, 22 April 1628, PL 1: 596.

[56]Peiresc to Bouchard, 5 Sept 1631, PL 4: 72.

[57]Peiresc to Arcos, 17 Oct 1634, PL 7: 142.

[58]Peiresc to Gassendi, 6 Sept 1633, PL 4: 353.

[59]Peiresc to Gassendi, 24 Dec 1633, PL 4: 398.

[60]Galileo to Diodati, 25 July 1634, Libri-Carucci, (April 1841): 214.

[61]Marcel Mauss, The Gift: Forms and Functions of Exchange in Archaic Societies, trans. Ian Cunnison (Glencoe, IL: Free Press, 1954), 58.

with Scheiner, Peiresc offered to purchase the instrument.[62] Hence, with Scheiner, the gift prevented the establishment of ties of a more personal nature.

The exchanges with Scheiner also demonstrated Peiresc's role as a moderator in controversies. Peiresc continued his astronomical exchanges with the Jesuit after the Galileo affair.[63] He urged Naudé to show compassion toward the Italian mystic, Campanella.[64] But when Campanella criticized Gassendi's philosophy, Peiresc said that he "gave him a going over."[65] Peiresc may have believed that the exchange of ideas was necessary for the truth to emerge. But he also maintained that individuals had a duty to God to be tolerant of other beliefs.[66]

The Tides: In Search of Proof

The search for proof of the movement of the earth preoccupied many seventeenth-century natural

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[62]Peiresc to Gassendi, 5 Jan 1634, PL 4: 410.

[63]See Peiresc to Gassendi, 6 Sept 1633, PL 4: 354; Descartes to Mersenne, n.d. Feb 1634, MC 4: 27.

[64]Peiresc to Naudé, 20 April 1636, PN 87.

[65]Peiresc to Gassendi, 2 June 1635, MC 5: 221.

[66]Peiresc to Holstenius, n.d. June 1637, PL 5: 486.

philosophers.[67] Telescopic observations did not reveal annual stellar parallax, nor did the principle of inertia demonstrate why projectiles fell straight to the ground--a fact all too clear in the Aristotelian world-view.

Galileo's theory held that greater tides would take place along the equator while only smaller tides would appear at the higher latitudes. To test Galileo's theory of tides, Peiresc sought observations from correspondents along the coasts of Europe and the Levant: Arcos in Tunisia, the physician Antoine Novel in Spain, and Capuchin priests in Egypt. He asked for observations of the periods of tides along the coast of Guinea and the relation of the local tidal and the lunar cycle, as well as for information on the altitude of sun and fixed stars. As he explained in one letter:

> There are reports which hold there is no apparent tide [along] the equator and others which have them every four hours, and others which hold the existence of a constant ocean current along the coast of Brittany to the equator. Of, I would like to be assured by such a credible man as you and irreproachable in that which concerns the truth.[68]

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[67]Cardinal Bellarmine expressed the need for empirical proof in 1615. Stillman Drake, Discoveries and Opinions of Galileo (Garden City, NY: Doubleday, 1957), 163-164.

[68]Peiresc to Colombin de Nantes, 1 Aug 1634, PV 82.

Peiresc also sent inquiries to navigators and government officials. The royal councilor and astronomer Bernard Frenicle de Bressy wrote that witnesses reported little tidal change along the coast of Africa and the equator, which refuted Galileo's theory. De Bressy stressed that Galileo's theory held that the "highest tides should be around the equator where nothing [e.g., no tide] has been reported." Furthermore, de Bressy indicated the occurrence of tides between latitudes of 27 to 60 degrees, but little change in the far northern latitudes.[69] De Bressy's observations provided evidence refuting Galileo's theory.

Not all correspondents complied with Peiresc's requests for information on the tides. Arcos refused to send information that could have been answered by navigators and sailors, or through personal observation.[70] When gifts failed, Peiresc used both flattery and rational arguments to secure compliance, writing "the consequences that can be drawn from the observations that I have requested are worthy of challenging the most noble-minded

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[69]Bernard Frenicle de Bessy to Mersenne, 7 June 1634, MC 4: 169.

[70]Peiresc to Arcos, 30 May 1636, PL 7: 171.

individuals among whom I acknowledge you figure although your modesty indicates the contrary."[71]

Telescopic Observation Stations

Following the Injunction of 1616, which prohibited support of the Copernican system, Peiresc legitimized telescopic observations to priests as a means of church calendar reform. The correction of ephemerides could enable more accurate predictions of the date of Easter--the first Sunday following the vernal equinox which varied between 22 March and 25 April--and the feast days in the upcoming years.[72]

While Peiresc was entreating ecclesiastics to lighten Galileo's sentence, he was also soliciting their assistance in organizing telescopic observation stations. By placing observers in several locations in Europe and the Levant, Peiresc believed he could make accurate determinations of terrestrial longitude.

The participation of clerics and missionary priests in telescopic observations may appear somewhat paradoxical in light of Galileo's sentencing. But the controversy

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[71]Peiresc to Arcos, 30 May 1636, PL 7: 170-171, 180.

[72]Peiresc to Arcos, 30 May 1636, PL 7: 179.

following the publication of the Dialogue can be attributed in part to Galileo's clash with the church and his apparent disregard to the Injunction of 1616.

As a patron with ties in Rome and Paris, Peiresc had the power to acquire compliance for his requests. But in dealing with intellectuals, he appealed to reason and experience,[73] citing the contribution to historical understanding[74] and church calendar reform, as well as the possibility of learning about God through his works. Peiresc also used the names of influential cardinals to endorse astronomical observations to missionary priests. He advised his correspondents in Rome, who organized Italian observation stations, to use the "name and authority of His Eminence Cardinal de Bagni to pull strings."[75] Barberini also ordered observations to take place throughout Italy and the Levant.[76] Barberini upheld

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[73]As mentioned earlier, Peiresc used various arguments to secure the cooperation of natural philosophers in observations. He noted that celestial observations could be compared with those made 2000 years earlier to the benefit of science and classical studies. Peiresc to Holstenius, 2 May 1628, PL 5: 274.

[74]Peiresc to Arcos, 30 May 1636, PL 7: 178-179.

[75]Peiresc to Naudé, 28 June 1635, PN 53.

[76]Peiresc to Gassendi, 19 Aug 1635 PL 4: 529; 8 Sept 1635, PL 4: 545. Barberini asked Father Incofer to observe in Rome, the mathematician-astrologer André Argoli in Padua, and the astronomer Camille Glorioso in Naples. Naudé to Peiresc, 21 July 1635, quoted in Peiresc to Gassendi, 19 Aug 1635, PL 4: 529. Cardinal Bagni gave orders for observations to be made in other parts of Italy.

the church decision in the Galileo affair; at the same time, he lent support to the telescopic astronomy by ordering priests to carry out observations.

The Lunar Eclipse of 28 August 1635

While latitude was determined by measures of the altitude of the sun at noon or of the height of the pole star, the determination of longitude was more difficult as it involved a difference in local time between two locations. Since Peiresc first proposed a method of determining terrestrial longitude in 1610, Richelieu had attempted to establish a prime meridian and Jean-Baptiste Morin had presented his technique for determining longitude before Renaudot's Bureau d'adresse and before a royal committee.[77] Morin's method, known as the lunar-distance method, involved making comparisons of measurements of the moon's position against the fixed stars and astronomical tables, and compensating for lunar parallax.[78]

Peiresc to Gassendi, 8 Sept 1635, PL 4: 545.

[77]Mersenne to Peiresc, 14 May 1634, MC 4: 135; MC 3: 388.

[78]Derek Howse, Greenwich Time and the Discovery of the Longitude (Oxford: Oxford University Press, 1980), 6-8, 14.

Peiresc, who earlier used the eclipses of the moons of Jupiter, now organized observation stations for viewing lunar eclipses.[79] He attempted to take control of procedure by standardizing the method of observation and techniques of measurement. He sent telescopes and detailed instructions on observation to Egypt,[80] Syria, Lebanon,[81] and Tunisia.[82] Peiresc instructed his observers first to adjust their clocks (possibly a water-clock) several days in advance of the eclipse, using the sun or stars to determine local mean time. He also asked for measurements of the altitude of the sun above the horizon. For the eclipse itself, he asked for precise times at the beginning, midpoint (total obscurity), and end of the eclipse, as well as for measurements of the altitude of the celestial moon taken from the top and bottom of the lunar disk.[83] By sending gifts of instruments and by providing

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[79]In the second century B.C., the Greek astronomer Hipparchus suggested determining longitude through the observation of a lunar eclipse from several locations.

[80]Peiresc to Magy, (n.d.), PV 6.

[81]Peiresc to Gassendi, 29 Aug 1635, PL 4: 535.

[82]See Appendix C, Peiresc to Arcos, 29 April 1635.

[83]Peiresc to Arcos, 11 May 1635, PL 7: 152-153.

instructions[84] and a format for recording data,[85] he secured the help of priests, critical to the success of the endeavor, and established a criteria for acceptable observations. Peiresc secured quality results.

Peiresc has been described as surpassing contemporaries as he did not limit his study to textual authorities but examined natural phenomena. He insisted on the need for new observations to correct inaccuracies in tables--errors that made the coordination of observations of an eclipse difficult.[86] His concern for the standardization of instruments and procedure, long-term observations, and correction of astronomical tables reflected a growing reform movement in astronomy.

> As Hipparchus and the other ancients truly observed the stars . . . we must out of necessity see and take anew the dimensions of the same stars, if we want to ensure that the calculation of others is correct or erroneous. Otherwise, it would be difficult to persuade others based on one simple result or calculation more or less exacting, given that each [observer] can calculate according to his fashion.[87]

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[84]See Appendix C.

[85]Peiresc to Agathange de Vendôme, 28 May 1635, PV 141.

[86]Gassendi to Peiresc, 3 Sept 1635, PL 4: 542.

[87]Peiresc to P. Césaire de Roscoff, 1 Sept 1636, PV 264.

Peiresc criticized those observers who determined geographical coordinates by using data from existing astronomical tables.[88]

Observations in Aix-en-Provence

A diverse group of clerics, magistrates, and workers gathered with Peiresc to observe the lunar eclipse at Aix. Peiresc's secretary, the astronomer Antoine Agarrat, and bookbinder Simon Corberan were there, as was the priest Théophile Minuiti.[89] Peiresc had arranged for Corberan to receive instruction in observations from Gaultier and Gassendi in preparation for the eclipse.[90] In addition to trained participants, Peiresc invited a local artist to sketch the phases of the lunar eclipse for a project on selenography.[91] The mapping of the topography of the moon would enable astronomers to indicate precisely the exact portion of the lunar disk covered by the earth's shadow and improve the accuracy of the measures for longitude.

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[88]Peiresc to Arcos, 30 May 1636, PL 7: 178.

[89]Humbert, Amateur, 221-222.

[90]See Gassendi to Peiresc, 1 Jan 1634, PL 4: 407; Peiresc to Gassendi, 18 Jan 1634, PL 4: 422.

[91]Peiresc to Gassendi, 29 Aug 1635, PL 4: 535.

Some assistants measured the elevation of certain fixed stars for the determination of local mean time; others viewed through the telescope; still others made notations of the progression of the earth's shadow across landmark features on the moon.[92]

Despite careful organization of observations to take place throughout Europe and the Levant, Peiresc's best-laid plans were not without difficulty.[93] The stars needed to determine local time were not visible;[94] a local resident and participant, Canon Antoine de Bargemon, excused himself from observing, pleading that he had masons working on his house;[95] the three men sent to a nearby mountain to observe[96] fell asleep and missed the beginning of the eclipse; in Digne, north of Nice, Gassendi's view was obscured. In the end, Peiresc lamented "all that preparation was in vain."[97]

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[92]Humbert, L'oeuvre astronomique de Gassendi (Paris: Hermann, 1936), 7-10.

[93]Peiresc to Gassendi, 8 Sept 1635, PL 4: 544.

[94]Peiresc to Gassendi, 29 Aug 1635, PL 4: 534.

[95]Bargemon also refused to allow Agarrat to observe from his house, which had a clear view. Peiresc to Gassendi, 29 Aug 1635, PL 4: 535.

[96]Corberan, an artist, and the son of a noble failed to carry out their observations despite their obligations to Peiresc.

[97]Peiresc to Gassendi, 29 Aug 1635, PL 4: 534-535.

Within two months following the eclipse, Peiresc had received observations from the astronomer Boulliau, Claude Mydorge, and Mersenne in Paris, and from Kircher in Rome.[98] Arcos, who earlier expressed a willingness to comply,[99] provided numerous excuses for his failure. "I am unhealthy and slow," he wrote, "and at my age cannot undertake such work; to engage someone locally . . . [is impossible as] barbarism has not produced any capable men."[100] Peiresc responded, "I have had observations made in numerous places by ordinary gardeners,[101] bookstore owners, bookbinders, and masons, and other artisans less skilled."[102] And Peiresc persisted, arguing that celestial observations would render Arcos's work on Africa more valuable.

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[98]Gassendi to Peiresc, 27 Aug 1635. PL 4: 558-559; Peiresc to Gassendi, 28 Oct 1635, PL 4: 559-561.

[99]Peiresc to Arcos, 29 April 1635, PL 7: 145. Arcos planned to dedicate his Relations africanes to Peiresc. Arcos to Aycard, 2 April 1633, Alexandre-Jules-Antoine Fauris de Saint-Vincens, ed., "Suite des lettres inédites de Peiresc, communiquées à M. Millin," Magasin encyclopédique 5 (1806): 135-136.

[100]Arcos to Peiresc, 16 Feb 1636, PC 2: 36.

[101]Peiresc referred to the gardener-astronomer Féronce Auzias, who worked for Jacques de Valois in Grenoble. Humbert considered Auzias among the great French astronomers who included Gassendi and Boulliau. Pierre Humbert, "Les astronomes français de 1610 à 1667," Bulletin de la Société d'études scientifiques et archéologiques de Draguignan 44 (1942): 36.

[102]Peiresc to Arcos, 30 May 1636, PL 7:176.

Contemporary data would be compared with that of the ancients[103] and also would be used to determine the location of the battle during the eclipse.[104]

Once the observations were made, Peiresc awaited results. Three weeks had passed since the eclipse and he still had no news from Rome.[105] He sent numerous letters reminding participants of their obligations or inquired if priests had received their gifts.[106] By November, he had received most of the observations from Italy and France.[107] Early in December, he reiterated his orders to the Capuchins to send their observations.[108] With other priests, he was almost reproachful over the carelessness in observations.[109]

Many of the records of observations were incomplete. Peiresc asked for clarifications on the method of measuring celestial altitude and making observations--whether the

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[103]Peiresc to Arcos, 18 Oct 1635, PL 7: 163-164.

[104]Peiresc to Arcos, 30 May 1636, PL 7: 178-179.

[105]Peiresc to Gassendi, 21 Sept 1635, PL 4: 550-552.

[106]Peiresc to Agathange de Vendôme, 12 Sept 1635, PV 171.

[107]Peiresc to Naudé, 5 Nov 1635, PN 62; Peiresc to Gassendi, 25 Nov 1635, PL 4: 447.

[108]Peiresc to Agathange de Vendôme, 24 Dec 1635, PV 213.

[109]Peiresc to Cassien de Nantes, 24 Dec 1635, PV 216.

observer used the left or right eye and a long or short telescope, stressing the inaccuracies of measurements obtained by naked eye. Peiresc also requested the names of other participants. Some observations from Cairo and Aleppo[110] lacked measurements of the altitudes of the fixed stars, which were necessary for determining local time.[111] Other observations did not include the names of participating witnesses,[112] and still others were copied from existing astronomical tables and paraded as new observations.[113] Peiresc could only wonder how one could "prefer to believe what the mathematicians say about longitude, latitude, the dimensions of the stars rather than . . . examine the truth of their suppositions."[114]

Other observers were equally reluctant to send their results. Reminding priests of telescopes and quadrants, the books on the Arabic language, and the silver chalice he

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[110]Peiresc to Cassien de Nantes, 24 Dec 1635, PV 216-217.

[111]Peiresc to Gassendi, 23 Nov 1635, PL 4: 571. The Cairo observations were inexact. Peiresc to Gassendi, 9 Jan 1636, PL 4: 594. See also PL 1: 51.

[112]Peiresc asked Cassien de Nantes to name participants. Agathange de Vendôme was vague in his identification of an Armenian and an interpreter by the name of Jean Malin or Molini. Peiresc to Cassien de Nantes, 24 Dec 1635, PV 217.

[113]Peiresc to Gassendi, 28 Oct 1635, PL 4: 559.

[114]Peiresc to Anathase de Nantes, 27 Dec 1636, PV 293.

had sent, Peiresc made it clear that there were no free gifts.[115] Acceptance assured an obligation to reciprocate or to risk losing honor and recognition.[116]

Peiresc tried to alleviate fears expressed by some priests concerning the reliability of their results. He told Michelange de Nantes to send the results "even if you have some suspicion of mistaking one star for another or one degree for another on your instruments."[117] To obtain these observations, Peiresc sought even the intercession of the superior of the mission of Aleppo, Father Bonaventure de Lude.[118] As many of Michelange's papers were destroyed during the priest's trip to Lebanon, Peiresc received only notes from fellow observers in January 1636.[119]

In addition to the problems arising from carelessness or lack of cooperation, the skilled astronomers made mistakes. André Argoli's data were incompatible with his published ephemerides, which explained his reluctance to

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[115]Peiresc to Agathange de Vendôme, 5 Sept 1635, PV 167.

[116]Mauss, 3-6, 31-39.

[117]Peiresc to Michelange de Nantes, 21 Aug 1636, PV 257.

[118]Peiresc to Bonaventure de Lude, 22 Aug 1636, PV 258-259.

[119]Contenay to Peiresc, 6 Jan 1637, PV 305.

send his observations.[120] Naudé wrote from Italy, "It is nearly impossible to expect much else from these messieurs, the Italians. Perhaps you will have more satisfaction from those [observations] of Monsieur Camille Glorioso."[121] Although Glorioso was said to be second only to Galileo,[122] Peiresc pointed out that he "forgot things" such as the altitude of the moon during an eclipse.[123] "[These] inconveniences brought on by people of the profession," Peiresc wrote Gassendi, "show the necessity of printing a small booklet [on the method of observation]."[124] Peiresc later added, "I believe that once and for all, you should resolve to write this small booklet to provide directions to all those who observe in foreign countries."[125] Gassendi did not comply with this request. Gaultier wrote the memoirs on observations.

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[120]Naudé to Peiresc, 30 Nov 1635, PC2: 45.

[121]Naudé to Peiresc, 30 Nov 1635, PC2: 45.

[122]Naudé to Peiresc, 29 March 1636, PC 2: 66.

[123]Peiresc to Gassendi, 23 Nov 1635, PL 4: 579.

[124]Peiresc made this request in two published letters to Gassendi. Peiresc to Gassendi, 23 Nov 1635, PL 4: 580; Peiresc to Gassendi, 23 Nov 1635, PL 4: 573. See Appendix C, Instructions to observers.

[125]Peiresc to Gassendi, 23 Nov 1635, PL 4: 572.

Results of Observations

Despite inconsistencies in procedure and inaccurate data, observations of the lunar eclipse of 28 August 1635 offered practical applications. The Provençal astronomers determined the difference in terrestrial longitude of numerous cities. They discovered that the length of the eastern Mediterranean Sea was approximately 1000 kilometers shorter than shown by cartographers on existing maps,[126] an error forcing sailors to make adjustments in navigation between Malta and Cyprus.[127] By demonstrating the practical application of astronomy, Peiresc broke with the traditional conception of this science as a means of saving appearances. Astronomical observations provided a means of gaining knowledge of the world.

The work of the Provençal school further demonstrated that communication and cooperation were crucial to the success of systematic and simultaneous observations. Peiresc used correspondence networks to organize observations and to transmit explicit instructions on procedure, as well as to send instruments. Gifts, the promise of patronage, and Peiresc's persistence, motivated

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[126]Guillaume Bigourdan, Histoire de l'astronomie et l'observation et des observatoires en France (Paris: Gauthier-Villars, 1918), 37.

[127]Peiresc to Holstenius, 2 July 1636, PL 5: 445.

priests to cooperate. Other individuals were unmoved by gifts. One broken link in the network could jeopardize a venture.

The observations contributed to the growing acceptance of the use of instruments in providing evidence and in gaining assent for claims about nature. Galileo's first telescopic observations, re-produced by the Jesuits in 1611, secured recognition for the use of instruments to enhance sensory perception of the world. Gassendi's observation of the transit showed that telescopic evidence could be used to overturn traditional assumptions about the world.

Communication also provided the means of securing legitimacy for results of observations. By including the names of witnesses and detailing procedure of observation in a letter, Peiresc transformed a personal communication into a "representation" of natural phenomena. He sent this new text to highly-placed individuals and secured recognition for his scientific activities.[128]

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[128]Robert A. Hatch, Personal Communication, University of Florida, Gainesville, FL, fall 1991.

The Provençal School of Astronomy

Following the success of the observation of the lunar eclipse of August 1635, Peiresc made numerous plans for other astronomical work. He established a school to train missionary priests in telescopic observations. He initiated work in selenography to render the observations of the lunar eclipse more accurate. He engaged an artist to make maps of the moon. Furthermore, he agreed to assist the Belgian priest Wendelin in his measurements of the latitude of Marseilles.

Training program. Peiresc recognized the need to define techniques of observations and train a network of observers. For nearly seven years, he sent instruments and instructions on the procedure of telescopic observations to priests. A training program providing hands-on experience would eliminate many of the errors of instrumentation, of the measurements of planets and stars, and of time-keeping. Training would offer instruction on the use of the quadrant and astrolabe in the measurement of distances and altitudes of the fixed stars and planets. Similar measures could be used to determine local mean time. To estimate the duration of an eclipse, Peiresc and Gassendi suggested counting pulse or reciting prayer. Perhaps they described how several observers could most effectively divide the tasks. For example, in observing the transit of Mercury,

Gassendi used his telescope in an upstairs room while an assistant below in another room, noted the altitude of Mercury when he heard stomping from the room above.[129] The astronomers might have also planned to demonstrate the construction of instruments. Galileo sent lenses for a telescope in the mail--along with a piece of string indicating the focal length or distance between the lenses, which could be adjusted according to the needs of the observer.[130]

Since his early astronomical work in 1610, Peiresc had recognized the need to establish observation stations at diverse geographical locations. His location at Aix provided the convenient location to train priests en route to the Levant. Later, in 1627, Peiresc hoped to instruct Holstenius who was to accompany Gassendi to Constantinople to make observations--a plan which never materialized.[131] The following year, he told the Dupuys that he would ask Barberini to order missionary priests to observe from their missions in the Levant. Nearly 20 years had elapsed since Peiresc had conceived of a method of determining longitude

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[129]Albert Van Helden, "The Importance of the Transit of Mercury of 1631," Journal for the History of Astronomy 7 (1976): 4.

[130]Galileo to Diodati, 25 July 1634, Libri-Carucci, (April 1841): 214.

[131]Peiresc to Holstenius, 2 Sept 1627, PL 5: 245.

using the eclipses. During this interval he established contacts throughout Europe and the Levant through gifts and the promise of patronage. He had also constructed a tower on his house from which to observe.[132]

Recruitment of priests. The promise of self-advancement, patronage, and the church endorsement of the work in longitude[133] motivated a number of clerics to participate in telescopic observations. The priest Minuiti, who wanted to belong to the group of astronomers, was described by Peiresc as having the "courage to make some worthy and important observation from the same locations that the great men of antiquity observed."[134] The Capuchin superior Agathange de Vendôme advised missionaries to receive training in Aix from a "learned magistrate, zealous for the good of all souls, interested in all kinds of books and sciences, and who has shown himself to be one of our friends."[135] De Vendôme told

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[132]Gassendi, Book 5: 111.

[133]Naudé relayed Barberini's wishes to Peiresc. Naudé to Peiresc, 26 May 1636, PC 2: 81.

[134]Peiresc to Gassendi, 8 Sept 1635, PL 4: 543.

[135]Agathange de Vendôme to PP. Pierre de Guingamp and Agathange de Morlaix, 22 April 1636, PV 227.

priests to bring instruments to the Levant--not "useless things" such as prayer books.[136]

Provençal astronomers. Peiresc established contacts with missionaries abroad and solicited the help of priests in Provence. Kircher, who fled Germany during the Thirty Years' War (1618-1648), taught from 1632 to 1634 at Avignon, and there built a planetarium and an observatory.[137] Kircher provided some instruction in astronomy to the magistrates Pierre-François Tonduti de Saint-Légier and Antoine-François Payen,[138] and received the visit of the astronomer Johann Hevelius.[139] In 1633, he visited Peiresc and established ties with observers in Provence.[140] After moving to Rome, Kircher helped organize observation stations in Italy for the eclipse of 1635 and introduced Gasparo Berti, a talented astronomer and geographer, to members of the Provençal School.[141]

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[136]Agathange de Vendôme to Fathers Pierre de Guingamp and Agathange de Morlaix, 22 April 1636, PV 225-227.

[137]R.P. Marcel Chossat, Les jésuites et leurs oeuvres à Avignon (1553-1768) (Avignon: Seguin, 1896), 234-235.

[138]Pierre Humbert, "Les astronomes français de 1610 à 1667," Bulletin de la Société d'études scientifiques et archéologiques de Draguignan 44 (1942): 46.

[139]John E. Fletcher, "Astronomy in the Life and Correspondence of Anathasius Kircher," Isis 61 (1970): 54.

[140]Peiresc to Gassendi, 8 Sept 1635, PL 4: 545.

[141]Fletcher, 57.

Also in Provence were the Hebrew scholar Rabbi Salomon Azubi of Tarascon and the priest Pierre Antelmi of Fréjus. Many of Peiresc's exchanges with Azubi concerned translations of ancient astronomical tables, some of which dated from 300 years earlier and were adjusted for use in Aix.[142] Over the years, Peiresc had provided Antelmi with instructions on the use of the telescope; he invited him to view the upcoming transit of Mercury predicted by Kepler[143] and a solar eclipse,[144] and provided information on the adjustment of telescopic lenses.[145] Peiresc also sent Antelmi books by Tycho de Brahe and the condemned Dialogue by Galileo. [146]

Many priests stopped at Aix for training. Zacharie de Nogent and Charles-François d'Angers came from a mission in the Orient;[147] Agathange de Morlaix and Pierre de Morlaix, from Cairo; Father Effrem of Nevers and Brother Alexander of Angoulème, from Saïd. These individuals represented only a few of the priests who received training in

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[142]PC 1: 605.

[143]Peiresc to Pierre Antelmi, 13 Aug 1631, PL 7: 69.

[144]Peiresc to Antelmi, 10 April 1633, PL 7: 79.

[145]Peiresc to Antelmi, 23 Feb 1632, PL 7: 75-76.

[146]Humbert, "Astronomes," 18-19.

[147]Peiresc to Michelange de Nantes, 21 Aug 1636, PV 256.

Provence.[148] As Gassendi wrote, there were no "Capuchins or studious person who passed through Provence, intending to travel into the East . . . [whom Peiresc] did not enjoin the care of making such observations."[149]

Gassendi, Peiresc, and Gaultier had worked together for nearly twenty years, but not without some rivalry. Gaultier was reluctant to acknowledge Gassendi's observation of the transit. Later, he voiced his displeasure when Gassendi deferred to other astronomers or sent the observations of Tonduti de Saint-Légier throughout Europe. Peiresc wrote Gassendi that "Monsieur de la Valette [Gaultier] found it a little strange that you indicated the beginning of the solar eclipse of last 8 April to Mr. Schickard based on the observation of Sieur Tonduti, and not on his made in this city."[150]

The Solstice. While Peiresc was organizing the observation of the lunar eclipse of August 1635, he received a request from Wendelin to observe the solstice in June 1635. Observations of the summer and winter solstices could provide information on the latitude of Marseilles and the variation of the obliquity of the ecliptic or the

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[148]Peiresc to Gilles de Loches, 29 July 1636, PV 249.

[149]Gassendi, Book 5, 134.

[150]Peiresc to Gassendi, 18 Jan 1634, PL 4: 424.

change in the angle between the equatorial and ecliptic planes. Wendelin needed recent observations to compare with those made by Pytheas 2000 years earlier. As Peiresc wrote Gassendi, "I am sorry not to have been notified in time, as I would have at least sent Garrat [Agarrat] to Marseilles."[151]

The following year, Peiresc organized observations of the solstice of 21 June 1636 in Marseilles, in Rome by Berti, and in Cairo by missionary priests.[152] The observers measured the shadow of the midday sun cast by an 18-meter vertical style or gnomon[153] that they installed within the church of the Oratorians under construction in Marseilles.[154]

> In one morning we put up a contraption of 18 canes [36 meters] diameter, of which the style was more than 9 canes [18 meters] high, and was divided into more than 80,000 distinct divisions in such a way that we could recognize and determine where the sun's shadow hit.[155]

Again Peiresc tried to persuade Arcos to participate. He emphasized the importance of these observations and the ease with which they could be undertaken. All that was

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[151]Peiresc to Gassendi, 17 June 1635, PL 4: 515.

[152]Peiresc to Holstenius, 2 July 1636, PL 5: 444.

[153]Humbert, L'oeuvre astronomique, 20-21.

[154]Peiresc to Holstenius, 2 July 1636, PL 5: 447.

[155]Peiresc to Arcos, 20 July 1636, PL 7: 181.

needed in one case was the observation by a Provençal merchant, Balthazar Claret, who happened to note the duration of the eclipse in Aleppo. "It sufficed to show the error in the marine maps," Peiresc wrote, adding, "From this you can judge the facility with which to please us."[156]

Peiresc wrote Holstenius, the scholar of ancient geography, for information on the size of the gnomon or style so as to more accurately compare observations with those of the ancient navigator Pytheas:

> I still forgot to tell you that our observation of the solstice at Marseilles by Mr. Gassendi makes us even more desirous than before to see if it is possible to obtain not only a very accurate drawing but a scale model of this antique style about which you spoke to me earlier . . . so as to judge with more certainty the observations which can be made, the proportions of the shadow of the sun during the year. I will write to Mr. de Bonnaire [in Rome] about the payment for this model.[157]

Selenography. To increase the precision of determining terrestrial longitude by observations of a lunar eclipse, astronomers needed to indicate the precise instant of the passage of the earth's shadow over specific features of the lunar surface, as opposed to the practice

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[156]Peiresc to Arcos, 20 July 1636, PL 7: 182.

[157]Peiresc to Holstenius, 2 July 1636, PL 5: 447.

of noting the beginning, middle, and end of the eclipse. Peiresc hired artists to produce accurate maps of the moon and to represent the entire course of the eclipse.

The project of the Provençal School was not the first attempt at selenography. In the early sixteenth century, Leonardo da Vinci made rough sketches of the moon. The English astronomer Thomas Harriot made the first drawings from telescopic observations on 26 July 1609. In November 1609 Galileo made his telescopic observations which were published in March 1610 in The Sidereal Messenger.[158] Although these sketches were imperfect, they did illustrate the similarities between the terrestrial and lunar surfaces.[159]

Peiresc wrote Gassendi in late August 1636 that the engraver Claude Mellan was in Aix: "We have almost persuaded him, Mr. de la Valette and I, to undertake to engrave and draw the moon with copper-plate engravings which will be a work memorable to posterity, and if you

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[158]Ewen A. Whitaker, "Selenography in the Seventeenth Century," Planetary Astronomy from the Renaissance to the Rise of Astrophysics, Part A: Tycho Brahe to Newton, ed. René Taton and Curtis Wilson (Cambridge: Cambridge University Press, 1989), 119-123.

[159]Van Helden has pointed out that Galileo did not intend making an exact map of the moon but rather to demonstrate that it had mountainous landscape and hence, was not the perfect celestial sphere. Van Helden, Sidereus nuncius, 47 n. 41.

were to come here with the drawings you have and your good telescope, could we not support this praiseworthy endeavor which will be to your liking?"[160] Mellan completed three engravings representing the moon in the first quarter, full, and in the last quarter. Peiresc's death from kidney stones on 24 June 1637 brought a halt to the completion of the project.[161]

The years 1610-1680 have been described as one of the major periods in astronomy in early modern science, as taking place in the "cabinet, by well-bred and scholarly individuals."[162] The death of Peiresc in 1637 and the absence of a patron and successor brought an effective halt to what is known as the Provençal School of astronomy.

Summary

Patronage became an integral part of the expansion of the correspondence networks and the development of science. Peiresc often exchanged gifts for information and cooperation to advance his work in a method of determining terrestrial longitude. But his use of patronage differed from that of Galileo. Galileo gained prestige and

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[160]Peiresc to Gassendi, 29 Aug 1636, PL 4: 599.

[161]Humbert, L'oeuvre astronomique, 16.

[162]Jean-Marie Homet, Astronomie et astronome en Provence: 1680-1730 (Aix-en-Provence: Edisud, 1982), 30.

influence only through the dedication of unique gifts to princely patrons. Peiresc's authority was founded in his position with the church and Crown.

Peiresc provided the Provençal School with a research program, connections to influential circles, and funding. The successful exchange of information was a function of Peiresc's personal characteristics--his tenacity and determination in his quest for knowledge, his ability to persuade by appeals to reason or with gifts, and his resort to manipulation to gain compliance for his requests.

He was a man representing the reform movement in astronomy. He saw the need for new observations, the standardization of instruments and instructions, and the training of observers. He recognized that communication and cooperation were crucial to the success of any scientific activity.

CHAPTER 7
CONCLUSION

For nearly 37 years, Peiresc acted as gatekeeper in the correspondence networks. His widely regarded erudition, family wealth, and noble birth enabled him to cross boundaries and forge contacts with a range of individuals. He used letters to solicit information--descriptions of demonic possession, a drawing of an elephant, an account of the eruption of Vesuvius, and observations of a lunar eclipse. Accompanying these requests were gifts--a silver chalice, an Arabic dictionary,[1] muscatel,[2] or a telescope. Peiresc sought any object that would please or any occasion to serve, as a means of cultivating and extending his correspondence networks.

Peiresc's studies in Italy under Galileo and membership in influential circles enhanced his personal prestige and offered him powerful contacts. As a gatekeeper in correspondence networks, he was instrumental

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1Peiresc to Agathange de Vendôme, 12 Sept 1635, PV 171.

2Concerning the gifts Peiresc sent to Arcos, see Arcos to Aycard, 15 March 1633, PC 2: 227.

in introducing Galileo's telescopic observations in France.[3] Through personal ties in Rome, Peiresc attempted to obtain a mitigated sentence for Galileo.

The geographical location of his cabinet in Provence allowed him to work out of the reach of censors of the Sorbonne and to receive scholars traveling between Europe and the Levant. With the help of epistolary contacts, Peiresc organized stations for the observations of lunar eclipses for his work in determining terrestrial longitude.

Peiresc and the Development and Communication of Scientific Activity

Many of the early virtuosi demonstrated a passion for curiosities and dabbled in scientific activities. Others, such as Peiresc, were more concerned with the development of practical applications and the contribution to material progress. To understand the role of Peiresc as a gatekeeper and patron, this study has provided an examination of private academies as a forum for scientific activities, religious barriers to communication and strategies of evasion, and the use of a system of reward and communication to motivate and legitimize scholarly endeavors.

3Pierre Humbert, "Les astronomes français de 1610 à 1667," Bulletin de la Société d'études scientifiques et archéologiques de Draguignan 44 (1942): 7.

Censorship and Evasion

The gradual acceptance of an experimental method to secure knowledge threatened to undermine a society in which the church was recognized as the sole interpreter and arbiter of God's will. Censorship and the Inquisition offered the church a means of protecting dogma and authority, as well as controlling public information. Censors examined manuscripts, newspapers, and published texts. Representatives of the book trade inspected presses and reported heretical works. But despite many attempts to maintain the traditional conception of a finite and hierarchical world and to protect the authority of the Scriptures, censorship did not achieve its intended goal. Inconsistent guidelines and rivalries among censoring agents led to sporadic and, at times, ineffectual control of the book trade. From Protestant border states, Huguenots arranged for the publication of works on the Index of Prohibited Books. Galileo's Dialogue was published in Germany after it was condemned by the Inquisition. Diplomatic pouches and personal correspondence offered a means of evading border controls. Peiresc sent books and letters through influential clerics to avoid inspections by censors.[4] Rhetorical strategies were used to dissimulate views in published works. Through

4Peiresc to Holstenius, 16 Oct 1634, PL 5: 425.

a carefully crafted dialogue, Galileo attempted to provide empirical support for the movement of the earth. The use of a retraction enabled Renaudot to define the Copernican propositions.[5] Diodati published the translation of Galileo's Dialogue under a pseudonym.[6] Other individuals remained cautious in their published views and private exchanges. Mersenne sent different versions of a text to Italy and France. Peiresc advised expressing views in general terms that could not be misconstrued by ill-intentioned censors.[7]

Patronage

While the church and crown tended to deny legitimacy to the new science, the private academies provided the context for the recognition of scientific initiatives and a forum for discussion when new ideas threatened to undermine traditional authority. These academies were headed by a patron, who legitimized activities through social status, provided funding for research, and offered a means of advancement. The Medici patronage enabled Galileo to achieve the status of a philosopher in the court of a

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5See Appendix B.

6MC 5: 272.

7Peiresc to Gassendi, 13 Jan 1634, PL 4: 428.

prince.[8] Peiresc used the promise of patronage and gifts to secure compliance for his requests for information.

While Galileo was able to improve his status through the dedication of a book to a prince, this strategy did not guarantee the acceptance of a work by a scholarly patron.[9] Peiresc, in fact, was criticized Mersenne for the dedication of a work which he had not seen.

While patronage offered many advantages such as financial support and freedom from responsibility, there were also disadvantages, notably the loss of intellectual autonomy. As Galileo's personal prestige was dependent on his position with the Medicis, his scholarship was directed toward the production of visible symbols.[10] Peiresc abandoned his plans to dedicate tables of planetary movements to Marie de Medici, fearing the loss of autonomy. Wendelin refused a position in Rome, which would have jeopardized his ability to communicate freely with other natural philosophers.[11]

8Mario Biagioli, "Galileo's System of Patronage," History of Science 28 (1990): 15.

9Peiresc to Luillier, 28 May 1635, MC 5: 363.

10Biagioli, "Patronage," 21.

11Naudé to Wendelin, 20 Sept 1636, PC 2: 98.

Private Academies

Membership in the private academies implied the obligation to cooperate and communicate in scientific initiatives and to place the advance of knowledge before personal recognition. While Galileo sought to enhance personal prestige through publications, Peiresc preferred sharing ideas with friends[12] and directing his work to serve the public.[13] He willingly loaned his collections of curiosities and copies of manuscripts to friends.[14] On occasion, he found he had no more texts for personal reference.[15]

Much of Peiresc's energy and inquiries for information were directed toward the needs of friends. He responded to Wendelin's request for measurements of the solstice from Marseilles.[16] He attempted to organize the observation of the transit of Mercury but had no instruments in

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12Peiresc to Mersenne, 23 April 1635, MC 5: 142.

13See Peiresc to Morin, n.d., quoted in Léopold Delisle, "Un grand amateur français du dix-septième siècle," Annales du midi 1 (1889): 25; Peiresc to Corberan, 28 Oct 1630, PL 7: 970.

14Peiresc to the Brothers Dupuy, 11 Jan 1633, PL 2: 414.

15Pierre Humbert, Un amateur: Peiresc (Desclée de Brouwer et cie., 1933), 141.

16Peiresc to Gassendi, 17 June 1635, PL 4: 515.

Belgentier.[17] He encouraged Gassendi in his work on Epicurus and sent money to Mersenne's printer.[18]

His vast erudition and tireless energy in correspondence and ability to reward enabled him to control the flow of information. Peiresc's closest friend interpreted this apparent generosity somewhat differently. Gassendi portrayed Peiresc as jealously guarding his position as gatekeeper in the correspondence networks.[19]

Not all members of the scientific community willingly cooperated or facilitated the advance of knowledge.[20] Argoli was reluctant to send his astronomical observations, which contradicted his published ephemerides. Sirmond would not lend a book.[21] Furthermore, there were occasional rivalries. While Gaultier criticized Gassendi's observation of the transit of Mercury, Galileo refused to acknowledge it.[22]

17Peiresc to Gassendi, 22 Dec 1631, quoted in Pierre Humbert, "A propos du passage de Mercure," Revue d'histoire des sciences 3 (1950): 29.

18Peiresc to Mersenne, 8 July 1634, MC 4: 236.

19See Gassendi to Luillier, 9 Nov 1632, GL 8; Gassendi to Luillier, 4 Dec 1632, GL 19; Gassendi to Luillier, 29 Dec 1632, GL 47.

20Peiresc to the Brothers Dupuy, 23 June 1633, PL 2: 568.

21Peiresc to the Brothers Dupuy, 23 June 1633, PL 2: 568.

22Gassendi to Peiresc, 26 Feb 1632, PL 4: 258.

The disregard for protocol was the subject of much discussion.[23] When the nephew of the Brothers Dupuy did not visit, Peiresc considered it a breach of honor.[24] In letters to Mersenne, Peiresc stressed the importance of etiquette--the care in using proper address.[25] Yet he excused Gassendi's omissions of Glorioso's titles.[26] He corrected clients on their writing style in letters, advocating simplistic rather than elaborate and pretentious speech.[27] Too many formalities in expression, Peiresc believed, could imply a lack of sincerity by the writer.[28]

Prestige of patron

The cultivation of clients who could provide information and curiosities was essential to Peiresc's prestige and his ability to establish and maintain ties with influential individuals. Connections in the Levant enabled Peiresc to obtain unusual objects--accounts of different cultures, curiosities, and rare manuscripts--that

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23See Gassendi to Peiresc, 3 Sept 1635, PL 4: 541; Peiresc to the Brothers Dupuy, 15 Dec 1629, PL 2: 206; Peiresc to the Brothers Dupuy, 23 June 1633, PL 2: 568.

24Peiresc to the Brothers Dupuy, 15 Dec 1629, PL 2: 206.

25Peiresc to Mersenne, 20 Aug 1635, MC 5: 354.

26Peiresc to Naudé, 31 July 1636, PN 93.

27Peiresc to Guillemin, 6 Sept 1624, PL 5: 30.

28Jacques Dupuy to Peiresc, 29 July 1635, PL 3: 708.

could be exchanged for other commodities. Minuiti brought mummies, one of which Peiresc gave to Cardinal Bagni; Arcos sent a gazelle which Peiresc sent to Barberini. An unusual gift which was worthy of a patron such as Peiresc. However, Peiresc wrote that the gazelle Alzaron "was not something that could be kept by someone of my station who is too insignificant . . . .I sent it to His Eminence the Cardinal Barberini to acquit myself of a debt."[29] Although Peiresc disapproved of Arcos's conversion to Islam and was disappointed by his refusal to carry out observations, the Tunisian supplied many unusual gifts and curiosities which could be used to enhance personal prestige.

Competence

In a letter to Mersenne, Peiresc pointed to the need to respect social boundaries and hierarchy in the scientific community. He dissuaded the priest from criticizing such a respected person as Galileo. Instead, he advised Mersenne to support his observations with proof. When dealing with important people, he advised treating them with respect.[30]

But the social status and competence of the observer did not guarantee uncritical acceptance of data by members of the Provençal School. Peiresc and Gassendi found errors

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29Peiresc to Arcos, 18 Dec 1634, PL 7: 144.

30Peiresc to Mersenne, 2 Dec 1635, MC 5: 520.

in observations sent by Argoli and Glorioso, the highly-esteemed Italian astronomers. Peiresc also investigated the theory of the tides set forth by Galileo, who was recognized as a leading natural philosopher of the period.

Peiresc, Patron of Scientific Activity

Peiresc's official positions in the church and Parlement might appear paradoxical in light of his support of scientific activities. But he never questioned the authority of the church or government. When he appealed to Barberini for a mitigated sentence for Galileo, he did not defend Galileo's position, rather he noted that it was characteristic of the human condition to err. Galileo deserved to be pardoned.[31] In the Gaufridy hearing, Peiresc upheld the verdict of the Parlement. Recognizing that many priests upheld the Aristotelian doctrines out of obedience, Peiresc legitimized telescopic observations in terms acceptable to the church. Telescopic observations offered a means of learning about God through His creation and of contributing to church calendar reform.[32] In letters to other correspondents, he stressed that astronomy

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31Peiresc to Barberini, 5 Dec 1634. Guglielmo Libri-Carucci, "Life of Galileo . . . Vie de Galilée," Journal des savants (April 1841): 218.

32Peiresc to Gilles de Loches, 17 April 1634, PV 47.

could enhance historical scholarship and provide a method of determining terrestrial longitude.[33]

Peiresc, the Gatekeeper

Recognition as a gatekeeper arose from Peiresc's vast network of correspondents and ability to offer unusual gifts and services in exchange for information. Malherbe kept Peiresc informed of royal policy and of occasions to serve the crown. Peiresc reciprocated with accounts of the Gaufridy trial as well as unusual gifts to be distributed among the ladies of the court. The Dupuys provided contacts with Parisian academies and emigrés in Holland.

The successful placement of clients in the papal entourage contributed to Peiresc's personal prestige and strengthened his connections with Rome. Holstenius, Naudé, and Bouchard offered reliable channels through which to receive and disseminate information. These ties enabled Peiresc to maintain communication with Galileo during the questioning by the Inquisition and to disseminate news of scientific initiatives from Italy throughout Europe.

There were other gatekeepers. Numerous connections in Protestant countries enabled Diodati to arrange for the publication of condemned works. Diodati also served as a liaison with Galileo, communicating the Italians works and requests for personal assistance. He arranged for Galileo

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33Peiresc to Arcos, 25 Jan 1634, PL 7: 119.

to send a telescope to Provence and initiated exchanges with Schikard.[34] Although he facilitated scientific communication, he was not a practicing scientist. Mersenne, too, corresponded with numerous individuals, assisted in astronomical observations, and published discussions of scientific initiatives. But he did not have the prestige of Peiresc; friends described him as a hard working but as demonstrating little judgment.[35]

Peiresc's authority as a gatekeeper stemmed from his positions with the crown and church. His name alone sufficed to legitimize scientific activities and his family wealth enabled him to patronize scholarship. His personal knowledge of correspondents enabled him to adapt letters to individual correspondents. As a gatekeeper in the networks, Peiresc had the authority to communicate, regulate, or retain information. Peiresc did not communicate letters concerning the Galileo hearing to the French community as he believed that the affair would be quietly resolved. In an attempt to gain a mitigated sentence for Galileo, he appealed to Barberini as a friend and sent gifts as a reminder of obligations. Had Peiresc succeeded in this endeavor, he would have demonstrated his authority in Roman ecclesiastical affairs. The Galileo

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34MC 2: 411.

35Saumaise to Peiresc, 2 Sept 1634, MC 4: 344.

affair demonstrated that although the Holy Office had the power to issue decrees, it did not have the authority to secure recognition for decisions in France.

Peiresc, the Moderator

Peiresc assumed the role of a moderator in disputes among members of the scientific community, maintaining it was one's duty to God to be tolerant of diverse views.[36] He corresponded with Scheiner following the condemnation of the Dialogue, although he blamed the Jesuit for initiating attacks on Galileo.[37] He tried to minimize difficulties between Naudé and Campanella.[38] But when Campanella criticized Gassendi's philosophy, Peiresc intervened and obtained an apology from the Italian.[39] Certainly, loyalty and honor were at stake as Campanella had accepted Peiresc's hospitality and introductions to scholarly circles. While Mersenne's publications often fostered controversy,[40] Peiresc believed disputes were detrimental to the cooperative spirit of the scientific community[41] as

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36Peiresc to Holstenius, n.d. June 1637, PL 5: 486.

37Peiresc to Gassendi, 25 June 1633, PL 4: 318.

38Peiresc to Naudé, 28 June 1635, MC 5: 258.

39Peiresc to Gassendi, 2 June 1635, MC 5: 221.

40Robert Mandrou, From Humanism to Science, 1480-1700, trans. Brian Pearce (Middlesex, UK: Penguin, 1978), 191.

41Another correspondent, Samuel Petit, expressed a similar concern. Petit to Peiresc, 6 Sept 1633, PC 2: 163.

well as to one's ability to carry out research.[42] Although Peiresc was loyal to friends, he was concerned with the advance of knowledge and the free exchange of information.

The private academies and correspondence networks formed an international community representative of diverse political and social affiliations. Although membership transcended social class, not all participants were equal. Individuals needed letters of recommendation to gain entry into the academies. Peiresc wrote the Dupuys to admit Gassendi.[43] He provided letters of introduction to scholars traveling to Rome.

Provençal School

In November 1610, Peiresc and Gaultier began telescopic observations of the moons of Jupiter in 1610. They were assisted by a small, heterogeneous group of individuals: notables, clerics, family, and members of the household. Individuals of high social standing were invited out of the need for reliable witnesses. Peiresc's comments about Mersenne's text, which included refutations of Galileo's writings, indicated a concern for the content of the text as well as for personal reputation within the

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42Peiresc to Naudé, 3 Jan 1635, PN 29.

43Peiresc to the Brothers Dupuy, 21 April 1628, PL 1: 594.

scientific community.[44] Peiresc maintained that a dedication implied the endorsement of the work by the scholarly patron. The authority of scientific reports was dependent on the social status of the observer. The ability to question or establish claims was related to position within the scientific community. Peiresc stated that Mersenne should not attack Galileo's findings as the Italian was respected throughout Europe.[45]

With the help of Gassendi and Gaultier, Peiresc established a training program in telescopic observations, published instructions on the use of instruments and procedures for measurements, and initiated a project in selenography.[46] Under the leadership of Peiresc, the Provençal School developed a protocol of observation and inquiry, and provided a system of communication and reward. This group in the south of France eventually emerged as one of the more prestigious centers of astronomy in early modern France.

44Peiresc to Luillier, 28 Aug 1635, MC 5: 363.

45See Peiresc to Mersenne, n.d.[late August, early Sept] 1635, MC 5: 369; Peiresc to Mersenne, 2 Dec 1635. MC 5: 520.

46See Peiresc to Holstenius, 2 July 1636, PL 5: 444-447; Peiresc to Gassendi, 29 Aug 1636, PL 4: 598; Peiresc to Gassendi, 12 Sept 1636, PL 4: 602-603.

Astronomical Activities

Peiresc played a critical role in the recognition of astronomy as a method of achieving knowledge about the world. He advocated the need to seek proof in nature itself rather than in the textual authorities of Aristotle and the Scriptures, "The age of great simplicity is gone, a time when we were persuaded a little too easily of the possibility of things . . . without seeking conclusive proof."[47] He maintained that observations could overturn traditional assumptions about the world.[48]

Peiresc sought to compare recent and ancient observations for work on the obliquity of the ecliptic,[49] to examine traditional assumptions about the world, or to determine the geographical location of ancient cities.[50] As he wrote one priest, telescopic observations could be used to correct misconceptions about the world and overturn calculations based on tables of planetary movements.[51]

47Peiresc to Gassendi, 13 Nov 1633, PL 4: 383. In a similar manner, Galileo, through Simplicio, wrote that the Peripatetics derived the true causes from the texts of Aristotle. Galileo Galilei, Dialogue Concerning the Two Chief World Systems, trans. Stillman Drake, 2nd ed. (Berkeley: University of California Press, 1967), 419.

48Peiresc to Césaire de Roscoff, 1 Sept 1636, PV 264.

49PN 92, notes.

50See Peiresc to Holstenius, 13 Oct 1630, PL 5: 355; Peiresc to Arcos, 25 Jan 1634, PL 7: 119.

51Peiresc to Césaire de Roscoff, 1 Sept 1636, PV 264.

The Development and Communication of Scientific Activity

The success of a method of determining terrestrial longitude depended on the cooperation of distant correspondents and the efficiency of epistolary exchanges. As the observation of a precise eclipse was a one-time event, cooperation and collaboration were critical. Peiresc sent instruments and explicit instructions: clocks should be adjusted by measurements of the altitude of the noonday sun or the position of the certain fixed stars; the main points of the eclipse should be indicated. Furthermore, observations needed to be made by trustworthy individuals.[52]

Persuasion and compliance

Peiresc used persuasive tactics to secure compliance for his requests for telescopic observations. Not only would scientific activity provide a means of calendar reform and determining terrestrial longitude, it would being prestige to the observer. Peiresc also pointed to Barberini's endorsement of this activity and his role in organizing observations in Italy.

52Peiresc to Colombin de Nantes, 1 Aug 1634, PV 82.

Gifts

Peiresc also motivated priests to comply with his requests for observations by sending gifts and promising patronage. Angora cats, plants, artifacts, or rare manuscripts often induced individuals to participate. Acceptance of gifts enhanced the prestige of the receiver and implied a contractual relationship. The recipient was obliged to reciprocate or lose prestige and honor.

Refusal to comply

As a patron, Peiresc rewarded achievement and cooperation and punished those individuals who refused to comply. In these cases, Peiresc resorted to manipulation and on occasion, threats. Peiresc has been described as a man who knew resorted to "kindness, persuasion, ruse . . . threats, supplications . . . to achieve his goals."[53] In seeking compliance, he used effusive speech to persuade, accompanying requests for information with effusive praise of qualities of observation and offers to serve.[54] At other times, he scolded participants for carelessness in

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53Sydney Aufrère and Marie-Pierre Foissy-Aufrère, eds., Egypte et Provence (Avignon: Fondation du Musée Calvet, 1985), 182.

54Peiresc to Colombin de Nantes, 1 Aug 1634, PV 78, 82.

observations[55] and advised greater precision in the future.[56]

While many individuals participated in astronomical observations in exchange for recognition, others, such as Arcos and Michelange de Nantes, refused. Arcos provided numerous excuses for not fulfilling Peiresc's requests for celestial observations. As a Moslem, he was beyond the spiritual reach of the church; by living in Tunisia, he was out of the jurisdiction of Peiresc. Yet he sought to maintain Peiresc's friendship by sending gifts. The missionary priest, Michelange de Nantes, never responded. Michelange de Nantes might not have been interested by the promise of advancement,[57] as was Gilles de Loches who aspired for a position with the Vatican.

The promise of gifts and social status left some of Peiresc's personal acquaintances unmoved. One cleric preferred to oversee work on his house; several assistants, including Corberan, fell asleep. Even Gaultier often preferred to view alone or not at all.

While Galileo sought to gain support for the Copernican propositions, Peiresc sought to demonstrate the practical application of scientific initiatives in

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55Peiresc to Cassien de Nantes, 24 Dec 1635, PV 216.

56Peiresc to Cassien de Nantes, 22 July 1636, PV 243.

57Conteny to Peiresc, 6 Jan 1637, PV 304-305.

determining terrestrial longitude, in reforming the church calendar, and in dating ancient manuscripts. Peiresc not only communicated Galileo's observations to the broader reading public, he developed a wide-spread and continuing research program.[58]

During his early telescopic observations, he planned to dedicate his tables of the Jovian moons to Marie de Medici to legitimize scientific activity.[59] After abandoning this project, Peiresc sought to secure social recognition by demonstrating the practical application of scientific activity.

Instruments introduced problems of evidence, certainty, and assent for claims. Telescopes were of poor quality; lenses were thought to deceive the senses. Furthermore, most clerics upheld the distinction between the supra-lunar and sublunar regions and the conception of a finite world composed of perfect celestial bodies. Telescopic observations introduced the difference between apparent and real dimensions of planets and stars, indicated the corruption of heavenly bodies, and

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58Seymour Chapin, "The Astronomical Activities of Nicolas-Claude Fabri de Peiresc," Isis 48 (1957): 15-16.

59At the time of his observation in November 1610, Peiresc did not realize he was the first to observe the nebula of Orion. This discovery was later attributed to him by Bigourdan. Guillaume Bigourdan, Histoire de l'astronomie d'observation et des observatoires en France (Paris: Gauthier-Villars, 1918), 21.

demonstrated the existence of other systems. Some clerics could not "see" through the telescope; others tried to reconcile their observations with the Aristotelian world-view or reported observations that supported traditional assumptions.[60]

Rhetorical site

Peiresc's explicit instructions on the procedure of observations and on expectations enabled him to establish personal authority as an astronomer and a "rhetorical site of truth."[61] He noted the type of instrument, the frequency of observation, the preparation by determination of local time, and the difference between observations made with the naked eye and those made with instruments. The short telescope eliminated haze that made the moon appear larger than it was and made the eclipsed portion seem greater.[62] Peiresc defined the proper procedure for establishing local mean time by measurements of the altitude of the sun or moon and a regular time keeper. He provided a model for recording observations. By sending

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60Gassendi to Peiresc, 26 Feb 1632, PL 4: 258-259.

61Christian Gregory, Personal Communication, Gainesville, FL, fall 1991.

62Peiresc to Célestin, 29 April 1635, PL 7: 859.

instruments and instructions, he standardized procedure, defined acceptable scientific claims, and created a "rhetorical site" of truth.

Witnesses

One means of establishing legitimacy and credibility for work was through the identification of witnesses by social position and astronomical ability. The use of skilled priests and highly-placed individuals as witnesses enabled Peiresc to persuade readers of the credibility of claims. The acceptance of evidence by the community depended on the authority of the observer.[63] In his investigations of witchcraft and curiosities, he demanded certified statements from magistrates and royal officers--individuals who were both qualified and irreproachable[64]--for their observations of natural phenomena.

Scientific Letter

Once observations were made, Peiresc sent letters to remind participants of obligations to send the results. Often Gassendi and Gaultier served to collate the data from observations. Gassendi relied on correspondence networks

63Peter Dear, "Totius in verba: Rhetoric and Authority in the Early Royal Society," Isis 76 (1985): 148-152.

64Yvette Conry, "Peiresc et l'ordre des `portraits,' dans les investigations du xviie siècle," Peiresc ou la passion de connaître, ed. Anne Reinbold (Paris: J. Vrin, 1990), 127.

to disseminate his observations of the transit of Mercury--observations which refuted traditional assumptions concerning the dimensions of planets and size of the world.[65] His use of a personal narrative to describe his procedure made his arguments more convincing for the reader and enabled him to secure assent for his claims.

For the results to gain recognition as a "plausible" representation of an observation, Peiresc attempted to recreate the "empirical experience" of the observations.[66] He outlined procedure, named witnesses, and cited results in letters sent through correspondence networks. By circulating these letters containing the positive results of scientific endeavors, Peiresc secured recognition for his claims and induced other individuals to participate.[67]

The letters not only contained data but demonstrated how rational inquiry provided information about the world. The observations of a lunar eclipse enabled the Provençal School to determine terrestrial longitude of major cities. Long-term observations and the correction of the tables of planetary movements would allow the church to establish the

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65Kepler made predictions about the size of planets in his Admonito, discussed in Chapter 5.

66Charles Bazerman, Shaping Written Knowledge: The Genre and Activity of the Experimental Article in Science (Madison: University of Wisconsin Press, 1988), 141.

67Bazerman, 140.

dates of many religious feast days. These positive results provided the needed legitimacy for scientific activity and social recognition for its practitioners.

The letters sent by Peiresc provide insight into the nature of scientific activity in the early seventeenth century. As science was not considered a means of producing certainty, Peiresc created a rhetorical site to validate results of observations. Participants could gain recognition by following instructions on the use of instruments and by naming witnesses. Reward might come in the form of improved social status or gifts. But failure to comply or cooperate could result in the loss of prestige and patronage.

Peiresc's strategies to secure compliance for requests for observations and to legitimize results demonstrate the role of social status and the use of patronage in producing knowledge and gaining assent for claims. As a gatekeeper, he controlled information flow in a vast correspondence network. His personal prestige and official position enabled him to instigate observations at a distance.

Further Research

While this study has focused on the role of Peiresc in developing and communicating scientific initiatives, further research will examine the scientific community of the Provençal School. One problem encountered in studying

a community is the identification and classification of the ability of participants and the determination of a baseline level of astronomical activity. Martin Rudwick's concept of "topography of competence" and "zones of involvement"[68] offer one method of classifying participants by ability and intensity of scientific activity, and of locating the "core set"[69] of the Provençal School.

Additional research will involve an examination of the letter as the precursor to the scientific report, in terms of what constituted evidence and acceptable scientific practice. An investigation of the relationship between the production and communication of information is needed to fully understand Peiresc's role in scientific activity. The sending of detailed instructions provided a protocol to follow in carrying out observations. The shipment of telescopes assured standardization in observations and prevented the challenge of claims on the basis of defective

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68Martin J. S. Rudwick, The Great Devonian Controversy (Chicago: University of Chicago Press, 1985) 422-428.

69Collins has defined the "core-set" as "those who are actively involved in experimentation or observation . . . such that they have an effect on the outcome of the controversy . . . [that is,] changing or reinforcing scientists' beliefs about nature." H. M. Collins, "The Place of the Core-Set in Modern Science: Social Contingency with Methodological Propriety in Science," History of Science 19 (1981): 8.

instruments. Hence, further study will examine the production and communication of scientific information.[70]

70Steven Shapin, "Pump and Circumstance: Robert Boyle's Literary Technology," Social Studies of Science 14 (1984): 482-487.

GLOSSARY

Throughout the study, concepts and terms have been introduced. This glossary offers some definitions and explanations.

Copernican system. This system holds that the earth rotates and the sun is at the center of the world. The Copernican system offered advantages over the Ptolemaic scheme. It reduced the number of epicycles needed to account for planetary movements, making calculations simpler; it explained the apparent retrograde motion of Mars, Jupiter, and Saturn.

Gatekeeper. In communication studies, the function of a gatekeeper is defined as someone who "determines what information is passed along the chain and how faithfully it is reproduced."[1]

Injunction of 1616. The Injunction of 1616 rejected the two major premises of the Copernican system, that the sun is at the center of the world and that the earth moves, ruling that these propositions were "contradictory to the doctrine of the Holy Scriptures [and] erroneous in the

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[1]Werner J. Severin and James W. Tankard, Jr., Communication Theories: Origins, Methods, Uses, 2nd ed. (New York: Longman, 1988), 46.

faith." The Congregation of the Index, which gave legal status to the decision, condemned the book On Revolutions by Copernicus and its propositions but did not declare them heretical.[2]

Libertine. This term has been used by Pintard to refer to a range of intellectual positions and moral behaviors. Libertines showed rejection or indifference toward religion or amoral or licentious behavior.[3]

Natural philosophy. Natural philosophy concerned the study of the relationships between man and woman, God, and nature. It involved the study of substances or matter, organization of the world, motion and change, and epistemology.

New science. The term is used here to refer to a new approach to investigations of natural phenomena involving observation, inquiry, and experimentation as opposed to a reliance on interpretations provided by the texts of Aristotle and the Scriptures. The new science involved a

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[2]John L. Russell, "Catholic Astronomers and the Copernican System after the Condemnation of Galileo," Annals of Science 46 (1989): 366.

[3]René Pintard, Le libertinage érudit dans la première moitié du xviie siècle (Paris: Boivin, 1943; repr. Geneva: Slatkine, 1983), 31-38.

gradual shift from a qualitative to a quantitative scheme, and a move from a geocentric world put in motion by an unmoved mover to a heliocentric universe.

Mitigated Skepticism. Many natural philosophers upheld the position of mitigated skepticism. They believed it was possible to learn about the apparent qualities rather than the real qualities of the world. Rational inquiry could provide a knowledge of appearances, which was sufficient for scientific activities.

Parlement. The Parlements had a judiciary function in France. Their members--magistrates--registered royal edicts, reviewed legislation, implemented laws, and presided at trials.[4]

Patronage. Patronage refers to an exchange of services, information, or gifts. It is a system of relationships among clients, patrons, and intermediaries in which services, information, or gifts are exchanged for protection, financial support, and self-advancement or improved social status.[5] In this study, Peiresc used

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[4]David T. Pottinger, The French Book Trade in the Ancien Regime: 1500-1791 (Cambridge, MA: Harvard University Press, 1958), 354.

[5]Mario Biagioli, "Galileo's System of Patronage," History of Sciences 28 (1990): 4-7.

patronage to legitimize scientific activity, ensure cooperation for requests for telescopic observations, and gain recognition for his claims about the world. Patronage also established a protocol or accepted means of behavior.

Private academies. The private academies refer to those gatherings that took place in the home of a patron prior to the establishment of the royal academy in 1666.

Ptolemaic scheme. This theory was developed by Claudius Ptolemy around 120-170 A.D. Ptolemy held that the earth was immobile at the center of the world. Planetary movements were explained by a system of epicycles and deferents.

Rhetorical site. Peiresc sent instruments to observers, provided instructions on procedure, and specified the textual format for scientific claims. By standardizing instruments and procedure, and demanding the names of witnesses, he delimited the format in which scientific claims could be made.

Traditional or medieval world-view. The traditional world-view was derived from the Aristotelian and Platonic writings and incorporated many concepts of Christianity. The finite world was created by a purposeful God and kept in motion by Aristotle's unmoved mover, which became the

Christian God. Earth was the center of the world. Nature was intelligible to men and women through sensory experience. Statements about natural phenomena expressed were in terms of qualities (e.g., form and essence) rather than quantities (e.g., matter and motion) and through deduction--from the general to the specific. Behavior and change were explained in terms of final cause or purpose. Hence, heavy bodies fell as they were returning to their place--earth.

The traditional world-view also maintained the existence of a hierarchy or being or progression of living things from the lowest animals to the highest being, God. The world was divided between the sub-lunar and supra-lunar realms. The earth was subject to corruption and change. In contrast, the planets and heavens were perfect celestial spheres, eternal and immutable and moved in circles.[6]

Tychonic system. Named after Tycho Brahe, this system combined elements of the Ptolemaic and Copernican positions. The planets revolved about the sun; this system in turn revolved about an immobile earth, which remained at

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[6]E.A. Burtt, The Metaphysical Foundations of Modern Science (1952; repr. Atlantic Highlands, NJ: Humanities Press, 1980), 17-20.

the center of the world of the the planets and fixed stars.[7]

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[7]Stephen Toulmin and June Goodfield, The Fabric of the Heavens: The Development of Astronomy and Dynamics (New York: Harper & Row, 1961), 186.

APPENDIX A
BIOGRAPHICAL INTRODUCTIONS TO PEIRESC'S CORRESPONDENTS

To facilitate reading this study, the appendix provides biographical introductions to many of Peiresc's friends. It also offers translations of letters and documents related to the Galileo affair and the organization of telescopic observation stations.

Agathange de Vendôme. As superior in the mission of Cairo, Agathange de Vendôme (? -1638) helped Peiresc organize astronomical observations by missionary priests in the Levant.

Arcos, Thomas. In Tunisia, Thomas Arcos (1568- ?), secretary to Cardinal Joyeuse before converting to Islam in 1632, supplied Peiresc with curiosities, such as chameleons and a gazelle. Arcos found numerous excuses not to participate in Peiresc's astronomical observations.[1]

Barberini, Francesco. Peiresc first met Francesco Barberini (1597-1679) during his studies in Italy in 1600. He maintained contact with him, exchanging gifts and tokens of friendship. Barberini became cardinal in 1623; his uncle Maffeo became Pope Urban VIII in 1622. Following

[1] PC 2: 190-204 passim.

Galileo's sentencing in 1633, Peiresc wrote Barberini to request that he use his influence with the pope to obtain a mitigated sentence for Galileo.[2]

Bouchard, Jean-Jacques. Jean-Jacques Bouchard (1606-1641), known for his debauch, became secretary of Latin letters for Barberini and provided Peiresc with direct access to Roman affairs.

Diodati, Elie. Elie Diodati (1576-1661) was one of the gatekeepers of correspondence networks. He served as liaison with Galileo, transmitting texts and letters, and arranged for works condemned in Catholic countries to be published in Protestant border states.

Dupuy, Pierre and Jacques. Among the closer friends of Peiresc were the historians and bibliophiles Pierre (1582-1651) and Jacques (1591 - 1656) Dupuy, with whom Peiresc exchanged letters on a weekly basis for more than 20 years. They inherited the extensive collection of manuscripts and books of their uncle, Jacques-Auguste de Thou I, in 1617 and assured the continuation of the private academy which became known as the Cabinet Dupuy. The Brothers Dupuy were

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[2]Guglielmo Libri-Carucci, "Life of Galileo . . . Vie de Galilée," Journal des savants (April 1841): 216-222.

appointed librarians for the king in 1647. Peiresc might have been introduced to the Dupuys in 1605 when he accompanied Guillaume du Vair to Paris.[3]

Du Vair, Guillaume. Du Vair (1556-1621) was Chief Justice of the Parlement of Provence before moving to Paris in 1616, where he headed the Parlement of Paris. Du Vair served as a patron to Peiresc, introducing him to influential circles in Aix and Paris and providing him with instruments.[4]

Gassendi, Pierre. Peiresc may have met Gassendi (1592-1655) as early as 1610,[5] although published correspondence dates from the 1620s. Gassendi, a cleric and astronomer from Digne, was a frequent visitor at Peiresc's home, assisting in astronomical observations and the collation of data from distant observers. His observations of the transit of Mercury in 1631 secured his reputation as an astronomer.[6] Peiresc encouraged Gassendi in his

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[3]Pierre Humbert, Un amateur: Peiresc (1580-1637) (Paris: Desclée de Brouwer et cie., 1933), 53.

[4]Humbert, Amateur, 49-50, 98.

[5]Lynn Sumida Joy, Gassendi the Atomist: Advocate of History in an Age of Science (Cambridge: Cambridge University Press, 1987), 238 n. 2.

[6]Albert Van Helden, "The Importance of the Transit of Mercury of 1631," Journal of the History of Astronomy 7 (1976): 1-10 passim.

interpretation of Epicurean atomism, which he integrated with Christianity. Following Peiresc's death, Gassendi published a biography on the life of his friend.

Gaultier, Joseph. In Provence, the cleric Joseph Gaultier (1564-1657) was considered one of the better astronomers of the period. He trained Gassendi and the astrologer Jean-Baptiste Morin,[7] and probably provided some instruction to Peiresc. Gaultier was known for his antisocial behavior and unwillingness to cooperate with requests to observe. However, along with Gassendi, he assisted Peiresc in the organization of the Provençal School and the development of a research program in astronomical observations.

Holstenius, Luc. Luc Holstenius (1596-1661), who converted to Catholicism, was a protegé of Peiresc and the Brothers Dupuy and received a position with the Vatican. Holstenius provided Peiresc with news from the papal court and information on ancient astronomical instruments, needed for comparison of recent measures with those made by Greek geographers.[8]

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[7]Humbert, Amateur, 87.

[8]Ernest Desplaces, "Holstenius," Biographie universelle (Paris: Madame Desplaces, n.d.), 19: 561-563.

Mersenne, Marin. Marin Mersenne (1588-1648) held gatherings in Paris to discuss mathematics. In the 1620s, he published attacks on atheists and deists but later establish contacts with some of these individuals, such as the Italian Campanella. Mersenne and Claude Mydorge (1585-1647) were among observers participating in telescopic observations from Paris.

Naudé, Gabriel. At the recommendation of Peiresc and the Brothers Dupuy, Gabriel Naudé (1600-1653), a bibliophile and scholar, acquired a position with Cardinal Bagni and later with Cardinal Barberini in Rome. Naudé's letters to Peiresc offered humorous and insightful accounts of problems in organizing observations with Italians.[9]

Schickard, Wilhem. Wilhelm Schickard (1592-1635) of Türbingen, Germany, was a Hebrew scholar and astronomer who died of the plague. Gassendi and Peiresc exchanged astronomical observations with Schickard.[10]

Wendelin, Godfrey. The cleric Godfrey Wendelin (1580-1660) was a Belgian astronomer who lived from 1604 to 1612 in Provence where he served as a tutor. Following his return

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[9]Phillip Wolfe, ed., Peiresc: Lettres à Naudé (Seattle: Papers on French Seventeenth Century Literature, 1983).

[10]Joseph Bougerel, Vie de Gassendi (Paris: Jacques Vincent, 1737; repr. Geneva: Slatkine, 1970), 71, 90.

to Beglium in 1612, he maintained correspondence with Peiresc and members of the Provençal School, soliciting their help for measurements of a solstice from Marseilles in 1636 for a comparison with measures made by the ancient navigator, Pythéas.[11]

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[11]Pierre Humbert, "Les astronomes français de 1610 à 1667," Bulletin de la Société d'Études Scientifiques et Archéologiques de Draguignan 44 (1942-1943): 17.

APPENDIX B
LETTERS AND DOCUMENTS CONCERNING GALILEO
Sentence of Galileo Published in the Gazette[1]

Galileo, you are strongly suspected of heresy, having upheld this false doctrine of the movement of the earth and the rest of the sun . . . and as a result you have incurred all the censures and the punishments of the sacred canons, of which, nevertheless we absolve you, with the understanding that with a sincere heart and unfeigned belief, you abjure and denounce before us the aforementioned errors and heresies and all other errors and heresies against the church. So that your great error will not remain unpunished, you will be retained and serve as an example for others; we order that the Dialogue be prohibited by public edict; that you will be held in the prisons of the Holy Office, at our discretion. And for your penitence, you are forced to say the seven penitential psalms once a week for three years: we reserve the right to modify, change, or remove the punishments and penitence in whole or in part.

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[1] Sentence of Galileo, Relations: 5 Jan 1634: 532.

Letters from Galileo

Galileo to Belisario Vinta, 7 May 1610[2]

Illustrious Seigneur and very honorable patron,

As I advised V.S. by my last letter, I have given three public lessons on the four Medici planets and on my other observations. I had the audience of the entire University, and each one of my listeners remained so enlightened and satisfied that even the highly placed individuals who had shown such harshness in the attack and refutation of my writings, seeing finally that the part was irremediably lost for those and that, either by virtue or by necessity, they had to give up, declared themselves coram populo that they were not only persuaded but ready to defend and uphold my doctrine against all philosophers who dared to combat it; so that the libels threatening me dispersed, as did the opinion of the said highly placed individuals who took care, to that day, to incite people against me, perhaps in the hope of sustaining it and believing that if I feared their authority and was frightened by the flow of their words and credulous disciples, that I would retire into my corner and remain speechless. But the affair turned otherwise; and truth carried it away.

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[2]Galileo to Belisario Vinta, 7 May 1610, Paul-Henri Michel, ed., Galilée: Dialogues et lettres choisies (Paris: Hermann, 1966), 356-361.

V.S. Illustrious will know moreover, that Their Supreme Highness will learn by Him, that I received from the mathematician of the Emperor a letter, or to express it more clearly, an eight page memoir, approving in all the details the contents of my book, without contradicting it or questioning it. And, the V.S. Illustrious can believe that the men of science in Italy would have said as much from the beginning if I had been, myself, in Germany or further; hence we can correctly believe that the neighboring princes of Italy consider the prominence and power of our Most Serene Seigneur more reprovingly than the immense treasures and forces of Muscovite or the Chinese, who are so far from them. But now, things are at the point where the desire can no longer take away from our discovery, nor convince of its error, nor put it in doubt.

The Illustrious ambassador Julien de Medici wrote me from Prague, that there are no telescopes in the court except for those of very mediocre power, and that is why he asked me for one, informing me that his Most Serene Highness so desires; and he wrote me that I should confide it to the secretary of the [diplomatic] resident who would guarantee its transport.

Galileo to Piero Dini (Rome), 21 May 1611[3]

I learned of the doubts expressed by the main professors . . . concerning the four Medicean planets and, although very occupied with other affairs, I will respond, in compliance with the order of V.S. Reverend, what I have to respond to this subject. I believe that this effort will not be lost as it answers the wishes of V.S. and that it gives me hope of reconciling myself one day, more than the consent of an individual, that of all the body of a university to renown and fame. Although it is a question of accomplishment and that the decision should only be based on sensory experience, nevertheless, given that doubts and counter examples arise from reasoning and imagination, and that I can not, from such a distance, offer tangible proof, which alone would allay truly and fully the mind, I will attempt, by my own reasoning, to disperse the doubt in the letter of signor Sassetti.

First, that these gentlemen can think that there is some deceptive trap in the telescope appears really astounding; as they will not deny, I am sure, that to conceal the defects and errors of an instrument or a contrivance whatever it is, belongs or only belongs to that who know the art on which this instrument depends and, furthermore, have carried out numerous experiments with the

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[3]Michel, 368-378 passim.

said instrument. Or, considering that the manufacture and the theory of this telescope depends on the knowledge of refraction, which is a branch of mathematical sciences, practiced particularly by me; and having proven that, since two and a half years henceforth, I have made with my instrument, or rather tens of these instruments, hundreds and thousands of experiences on hundreds and thousands of objects near and far, large and small, luminous and obscure, I do not see how someone could find me such the simpleton that I would remain the dupe of my observation, and that between the perspicacity of another and my own stupidity, there is such a chasm that this other one, without having seen my instrument, discovered its imperfections that I would not have perceived, me after 100,000 experiences, and not only myself, but not one of them and they are numerous, who used at the same time as I. That could be presumptive.

Some will perhaps say that, being aware of the illusions of my instrument, I do not fool myself, but that I find a way to fool others. To which I answer first in affirming, protesting, and confessing that these illusions, I am unaware of these, and that if some sublime genie makes them explicitly known, I would not seek to remove myself from the number of deceived and hide my ignorance with a cloak of guile; on the contrary, in such a case, I am ready to declare myself even more ignorant than the others,

seeing that an assiduous practice should have made me perceive my error more rapidly than others. I then add that it is not only my telescope that those I have manufactured that show the four planets of Jupiter but all the others, made in some place by some procedure, given that they are well made that they show enlarged and distinct objects.

Galileo to Nicolas Fabri de Peiresc, 22 Feb 1635[4]

Illustrious Lord and very esteemed patron,

Never could I, by my pen, express to your Illustrious Lord, the pleasure that the reading of the very obliging and prudent letter written by Him on my behalf and a copy of which was given to me just yesterday by sieur Roberto, my relation and patron. My pleasure was and is unbounded; not that I hoped for any mitigation but because I discovered, in one of my lords and patrons so full of excellent qualities, with a tender concern he sympathized with my condition, with passion and audacity, both generous and subdued temperate, he arranged an undertaking where so many others, ready to recognize my innocence, have remained silent.

And if my misfortune must bring me the benefit of so much kindness, my enemies can invent new machinations: as for me, I will not cease to give thanks to them.

I have said, Illustrious Lord, that I do not hope for any relief, and this because I have committed no crime. I could hope and obtain pardon and my pardon had I erred, as the faults are the substance to which a prince can apply his pardon and indulgences, but against an innocent who has been condemned, it is best to maintain rigor that can be cloaked with the appearance of justice. This rigor (that

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[4]Michel, 421-423.

V.S. believes me, for his own consolation) grieves me less than one could imagine, as I have at all times the support of two consolations: one is that to read my works, no one would know to find the hint of the slightest thing which strays from piety and reverence toward the Holy Church; the other is my own conscience, fully known unto me alone on earth and in Heaven by God who well understands that, for the cause for which I suffer, many would have gotten the best of me with their knowledge, but no man, be he a holy father, would have acted and spoken with more piety and with more zeal toward the Holy Church and, in short, with a better intention than I. This very religious and very holy soul, which is mine, as it would have appeared more clearly had it not found itself exposed in broad daylight the calumnies, frauds, intrigues, deceits, instrumented over 18 years in Rome to dazzle and trouble the sight of superiors! But you have at present, other and better proofs of my sincerity: the reading of my works allowed you to see which is the true prime mover in the war led against me under the guise of religion, which one is the enemy unceasingly besieging me, barring all the paths in such a way that I can not receive any assistance from the exterior nor leave to defend myself, the order having been given to all the inquisitors not to allow the publication of any of my works, printed over the years, nor to authorize the printing of any new work which I would like to publish.

Not only am I required to be silent before the numerous objections raised against me, in matters of pure physics, to deny my doctrine and proclaim my ignorance, I have to also swallow the derision, the sarcasm, and abuse used against me by people more ignorant than I. But I want to put an end to my grievances, even though I have scarcely begun; I no longer want to disturb Your Illustrious Lord and [want] to entertain Him with a more pleasing subject; I beg you to excuse me if, carried away by the natural need which make the afflicted pour out their feelings to those in whom they have confidence, I have imposed on this freedom [at the expense] of tiring you. It only remains for me to demonstrate to you by my attachment, the favors that I would not return to you in words for the humane and compassionate steps you have attempted on my behalf, and which you have learned were so effective that, had they not been to my advantage, we could at least be assured that they will have inspired some remorse among the minds, which, being minds of man, cannot be devoid of humanity. I declare myself again your obligated and devout servant. Wishing that God will reward your charitable action, I address my respectful greetings.

APPENDIX C
LETTERS AND DOCUMENTS CONCERNING ASTRONOMICAL OBSERVATIONS
Instructions on Astronomical Observations

Peiresc to Célestin (Levant) 29 April 1635[1]

If you could take the opportunity next 27 August, to observe the lunar eclipse which should appear the following morning of the 28th, in order to see this early sunrise and to time it, and compare it with another sunrise which appears over the rest of the neighboring countryside, and to note in the same way how the eclipsed moon will appear as it sets in the waves of the Mediterranean Sea [horizon], should you only do that, it would always be a very memorable observation for posterity, for the marvelous consequences that can be derived in determining the distances between here and over there. But if you could observe rather precisely the main phases of the said eclipse with some mathematical instrument which gives you the elevation of some fixed stars at the beginning of the eclipse, or when the moon will be total eclipsed, or when the light returns. this would be most useful and worthy of being cited in the future. In the absence of this, you should have the most accurate clocks that can be had, and observe them beforehand, comparing them with the hours of the most precise sun dials, and regulating them again

[1] Peiresc to Célestin, 29 April 1635, PL 7: 856.

several hours afterwards according to fixed solar clocks, if some can be set up there, or have some instrument that can give you the height of the sun above the horizon to compare it with the time of the solar clock and the gear clock, with which you will have taken the hours of the observations of the phases of the moon during its eclipse before early morning. If you could do nothing else, at least you should observe at what point (either at dawn or in the day) the moon will have begun to eclipse or lose all its light, and from having seen the first appearance of the sun before it is on the horizon of the neighboring territories until it lights all of them. If you do not have an instrument appropriate for measuring time, please have a member of your group begin counting the most promptly yet distinctly that he can, from the number one to the hundreds or even thousands . . . with which we could roughly estimate the true measure of time, or by the pulse of your arm or of that of another (if one can have the patience to count and to keep track of the count) during all this period of time it takes from the appearance of the sun at the summit of this mountain until it has lit the neighboring countryside. And, in a similar manner, to take the difference between the setting of the moon, over the normal horizon and from the crest of the mountain, if you can leave one man at the bottom who can indicate the moment by a shot or a fire, or by some indication visible from

above, so as to indicate in a similar manner the difference in time, then one day rare consequences would come out of these observations, particularly if you can observe the exact quantity of the eclipsed body of the moon both when it sets in the water over the horizon and when it will finally set from the summit of the mountain. But to clearly ascertain the said fraction of the moon truly eclipsed, you should look at it through one of the short or long telescopes, not those that are too long and too awkward to hold by hand and which over-enlarge the object, but the small and shorter ones which do not distort as much, but which nevertheless rid it of the extraneous rays of light which extend over the edge of the eclipsed body, eating away at it and covering it and appearing to gnaw more than a good finger's breadth. At the same time they extend over the sky surrounding the globe of the moon, and make it appear larger than it really is, which is easily discovered with the help of short telescope.

Perhaps some astrolabe will be there with which you could note the elevation of some fixed star at the beginning, before broad daylight, or at least the elevation of the moon above the horizon, when it begins to eclipse or, when it finishes losing its light (if your location allows you to see the moment) how much is missing. For all this will greatly help to adjust the point of the location of this country on the globe.

And while you will be there climbing the said mountain or descending it (if possible by different routes), it would be well to take advantage of this to observe other things which are more capable of serving.

Peiresc to Arcos, 29 April 1635[2]

If you can add the observation of an eclipse, as I have already begged you, of the moon or sun, you will be well remembered to posterity, as there are now men who do very exacting work in determining the location of the main sites of earth and of geography, and you are so close to Carthage which is on the same meridian as Rome that from there we can attempt to determine all the distances of the rest of the world more precisely than has ever been done. I believe that you did not observe the last lunar eclipse which occurred March 3 as I had asked you, but it is possible that you will make advance preparations to observe that of next August 28 which will begin around 2:30 after midnight and will be totally obscured one hour afterwards and the light returns one and one-half hours or more later, but it will already be broad daylight. If you can see the moon sink eclipsed into the sea on one side while the sun rises on the other and indicate how much of the eclipsed body is visible; that would be one of your more memorable observations of the century; the proximity of the sea and the season may provide us with the opportunity particularly if you could go sleep that evening closer to the sea than where Tunis lies; if only the view on the sea takes further away the mountains which surround it and lowers them

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[2] Peiresc to Arcos, 29 April 1635, PL 7: 149.

sufficiently to enable us to see the sunrise in the water and the moon going down and if weather permits, your observation will be remembered and will cast an aura over all your other works much more than you could imagine. If you could have the height of a fixed star taken before the day of the eclipse, or at the beginning of total obscurity, or at the beginning of the return of light of the moon, nothing more will be needed. Without [these measures], you need good clocks and, on several preceding hours of a same clock, take the height of the moon for future use, and on several following hours, take the height of the sun and see the time shown by the shadow from the sun on the sun dials to check the quality and accuracy of your clock; you will not regret this effort.

Peiresc to Arcos, 11 May 1635[3]

Since the last letter written in haste on the subject of the eclipse which I should like you to observe next August 28 in the early morning, I took it upon myself to send you in any case a small quadrant of carton that you can stick on a piece of wood or on stronger cardboard and raise the two sights that lay flat in order to bring them at right angle in the plane of the said instrument to help measure the height of the sun, when you want to regulate the true time of your clocks by allowing a sun ray to pass through the little hole or notch on the sights and to also take the height of the top or bottom of the edge of the moon when you observe the beginning or progressions of the eclipse, or when you want to take a precise reading of the hour before the beginning, and finally to take the height of some fixed star if you can go to that trouble to set and rectify the precise time of the beginning of the said eclipse and of the other phases worthy of note; such as when the shadow will touch the circle of the body of the lit moon, and when it will have covered it completely and when the shadow will begin to let the light reappear on the sphere of the moon; for as to the end of the eclipse, I believe you cannot see it there; and to achieve all this,

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[3] Peiresc to Arcos, 11 May 1635, PL 7: 152-155.

you must hold this little instrument in such a way that by the line of the sights, you can see the star or the edge of the moon which you want to measure: as the plumb line will indicate on the quadrant the degrees of the height of the star on the horizon and the body of the moon, from which we shall afterwards calculate which was the true hour and the true measure of your observations and what is the height of your pole at Tunis, and finally what is the degree of longitude you are at, and if you are not at the same degree and meridian as Rome. If you could indicate carefully at the proper time the height of some fixed star toward the east or toward the west, neither too high nor too low, this being better than taken at any other places in the sky, but you should do it at the very moment you have marked the beginning of the eclipse or what amount of the surface of the moon appears obscured and primarily when the shadow arrives precisely at the center of the moon body and when it has covered it entirely, and when the light begins to return; all these various instants of time are important and could be jointly used to better infer the true times of the whole [eclipse]. With that we can calculate more exactly the location of the place where you will be on the earth; but you should take care if you view the moon with the naked eye without a telescope, that your eyesight can induce you to error unknowingly because of the extraneous rays of light which make the circumference

appear larger to our eye, and which cover a part of the shadow that the eclipse makes on the disk of the moon, in such a way that with your eye, it seems that the shadow comes to the center of the moon, if you look with a short telescope which removes the haze, you find that the shadow passes the center with more than one finger and hence on all the other phases and appearances of the moon, that is to say that when the eclipse begins, it appears later with the naked eye than with the telescope. I believe that you do not lack a short telescope especially the shorter ones which are better for this use than the long, but anyway, I will send you one with the aforesaid quadrant and would like it if you would make a good celestial observation in this country.

Memoir to Send to Africa and to Egypt to Whomever Will Design to Observe Some Eclipse With the Instrument I sent or Some Larger One[4]

Since equipped with a quadrant over there, several days before and after the eclipse the observer must take the elevation of the sun over the horizon at noon and indicate the day, month, and year at which he will have made the observation of the sun.

If said observer were at the higher elevation of the Cape of Carthage or even better in Alexandria, it would be very helpful that he should take the elevation of the noonday sun as often as possible.

For indeed since the time of Ptolemy, we have not yet read anyone who has done this. Tycho having in the past begged, to no avail, the Messieurs of the Republic of Venice to order their ambassadors to have that work done; which was not possible due to lack of instruments.

If said observer is in Tunis or Cairo, he should do the same and also in Africa or at all the noteworthy locations where he may be in Egypt and in Judaea, since the latitude of these cities or locations is uncertain and doubtful, not knowing if it has varied since the time of

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[4] Pierre Humbert, "La determination des coordonnées geographiques au debut du dix-septième siècle," Ciel et terre 8-9 (1938): 233-238.

Ptolemy or Hipparchus. He will practice for some time preceding the eclipse to measure the meridian altitude of some known star.

As for the time, hour, and minute of the eclipse, we shall not know it unless the said observer designates the said time by the altitude of some known stars on the horizon at the beginning and toward the end of the eclipse; as, at present it is not possible to send overseas a clock marking minutes, and were it possible, it would not seem so useful.

If the quadrant that was sent overseas is too small, from this example the observer can make a larger one which can show degrees divided into smaller units such as tenths or other [divisions].

In Cairo, and possibly in Tunis it is likely that there are some Jews or Arabs or others skilled in astronomy who can provide some assistance and favor in exchange for their participation in these and similar observations, of which the said observer must promise to inform others by sending these observations and others of the eclipses to Europe; these Arabs and astronomers must have some instruments.

In the Absence of Eclipses, Instructions to Observe the Passage of the Moon over Some Fixed Star and the Altitude of the Sun during Solstice and Consequently that of the Elevation of the Pole [latitude] 1635[5]

The moon will cover the star which is in the left shoulder of Sagittarius,

- the 23 May around 4 in the morning
- the 13 August around 2 in the morning
- the 6 October around 6 in the evening.

The moon will meet the star in the eastern part and leave it by the west.

It is necessary to watch carefully for notice of the ingress or egress with the long telescope. Indicate the altitude of the moon or of some known star at the said ingress and egress. Take careful note of which place in the circumference the moon the ingress or egress occurs and designate this place with a spot or point facing it in the body of the moon, or represent it by a little pencil sketch.

To determine the altitude of the sun at the solstice, and as a result, the height of the pole, and other things that we can derive. you need a quadrant as large as possible, and with a two or three feet radius at least: the precise

[5]Humbert, 233-238.

right angle correctly indicated in the arc and even to the minute by the transversal lines, the sights equal and well-positioned on one of the sides.

Having affixed it by its center of gravity to a firm stand around which it turns easily, and dropping the plumb by a string from the center or pulled up both sides just beneath the arc.

In adjusting the sights with the sun according to the shadow (that the highest [sight] throws on the lower), take careful notices of the degrees and minutes what the plumb line indicates at noon the day of the solstice and even three or four days before and after, the days preceding which will be the 18, 19, 20, 21 and succeeding the 23, 24, 25, 26 of the month of June, and in order not to miss the noon, you must be about fifteen minutes beforehand to see the sun rise, and fifteen minutes afterwards to see it descend.

REFERENCES

Primary References

Adam, Antoine, ed. Oeuvres de Malherbe. Paris: Gallimard, 1971.

Fauris de Saint-Vincens, Alexandre-Jules-Antoine, ed. "Suite des lettres inédites de Peiresc, communiquées par M. Millin." Magasin encyclopédique. 5 (1806): 109-155.

Lebègue, Raymond. Peiresc à divers. Paris: CNRS, 1985.

_____. Peiresc: Lettres à Malherbe (1606-1628). Paris: CNRS, 1976.

Michel, Henri, ed. Galilée: Dialogues et lettres choisies. Paris: Hermann, 1966.

Rochot, Bernard, ed. Lettres familières à François Luillier pendent l'hiver 1632-1633. Paris: J. Vrin, 1944.

Tamizey de Larroque, Philippe, ed. Les correspondants de Peiresc: Lettres inédites, publiées, et annotées. 2 vols. Paris: Éditions de Paris, 1879-1897; repr., Geneva: Slatkine, 1972.

_____. Lettres de Peiresc. 7 vols. Paris: Imprimerie Nationale, 1893.

Tannery, Paul, Cornelis de Waard, and Armand Beaulieu, eds. Correspondance du P. Mersenne. 16 vols. Paris: Beauchesne, 1932.

Valence, Apollinaire de. Correspondence de Peiresc avec plusieurs missionaires et religieux de l'ordre des capucins, 1631-1637. Paris: Picard, 1891.

Wolfe, Phillip, ed. Peiresc: Lettres à Naudé. Seattle: Papers on French Seventeenth Century Literature, 1983.

Secondary References

Allen, E. John B. Post and Courier Service in the Diplomacy of Early Modern Europe. The Hague: Martinus Nijoff, 1972.

Amargier, Paul. "Peiresc et Marseille." Les fioretti du quadricentennaire de Fabri de Peiresc. Ed. Jacques Ferrier. Avignon: Académie du Var, 1988. 97-104.

Ashworth, William B. "Catholicism and Early Modern Science." God and Nature: Historical Essays on Encounters between Christianity and Science. Ed. David C. Lindberg and Ronald L. Numbers. Berkeley: University of California Press, 1986. 136-166.

Aufrère, Sydney, and Marie-Pierre Foissy-Aufrère. "Peiresc, ses émissaires et son correspondants de l'échelle d'Égypte." Égypte et Provence. Avignon: Fondation du Musée Calvet, 1985. 182-187.

Auger, Léon. "Les idées de Roberval sur le système du monde." Revue d'histoire des sciences et de leurs applications. 10 (1957): 226-254.

Bacon, Francis. The New Organon and Related Writings. Ed. Fulton H. Anderson. Indianapolis: Bobbs-Merrill, 1960.

Barnes, Barry, and David Edge, eds. Science in Context: Readings in the Sociology of Science. Cambridge MA: MIT Press, 1982.

Bazerman, Charles. Shaping Written Knowledge, The Genre and Activity of the Experimental Article in Science. Madison: University of Wisconsin Press, 1988.

Beaulieu, Armand. "Les réactions des savants français du début du xvii siècle devant l'héliocentrisme de Galilée." Convegno internazionale di studi galileian. Firenze: Giunti Barbera, 1984. 373-382.

Bernhardt, Jean. "Les activités scientifiques de Nicolas-Claude Fabri de Peiresc (1580-1637)." Nouvelles de la republique des lettres. 2 (1981): 165-184.

_____. "L'inventaire posthume de la bibliothèque." Peiresc ou la passion de connaître. Ed. Anne Reinbold. Paris: J. Vrin, 1990. 13-21.

Beugnot, Bernard. "L'ermitage parmi les livres." Revue française d'histoire du livre. 24 (1979): 687-707.

Biagioli, Mario. "The Anthropology of Incommensurability." Studies in History and Philosophy of Science. 21 (1990): 183-209.

_____. "Galileo the Emblem Maker." Isis. 81 (1990): 230-258.

_____. "Galileo's System of Patronage." History of Science. 28 (1990): 1-62.

Bigourdan, Guillaume. Histoire de l'astronomie et l'observation et des observatoires en France. Paris: Gauthier-Villars, 1918.

Bougerel, Joseph. Vie de Gassendi. Paris: Jacques Vincent, 1737; reprt. Paris: Slatkine, Geneva, 1970.

Brown, Harcourt. L'Académie physique de Caen (1666-1675)." Extrait des mémoires de l'Académie des sciences, arts et belles-lettres de Caen. 10 (1938): 177-207.

_____. "Peiresc." Dictionary of Scientific Biography. Ed. Charles Coulston Gillispie. 10 (1973): 488-492.

_____. Scientific Organizations in Seventeenth Century France. New York: Russell and Russell, 1934.

Bouchard, Jean-Jacques. Les confessions de Jean-Jacques Bouchard suivies de son voyage de Paris à Rome en 1630. Paris: Isidore Liseux, 1881.

Burke, Peter. The Historical Anthropology of Early Modern Italy, Essays on Perception and Communication. Cambridge: Cambridge University Press, 1987.

Burtt, E.A. The Metaphysical Foundations of Modern Science. 1952; repr. Atlantic Highlands, NJ: Humanities Press, 1980.

Butterfield, Herbert. The Origins of Modern Science: 1300-1800. 1957; repr., New York: Free Press, 1968.

Cahen-Salvador, Georges. Un grand humaniste: Peiresc (1580-1637). Paris: Albin Michel, 1951.

Chapin, Seymour. "The Astronomical Activities of Nicolas-Claude Fabri de Peiresc." Isis. 48 (1957): 13-29.

_____. "A Survey of the Efforts to Determine Longitude at Sea." 3 parts. Navigation. 3, no. 6 (1952): 188-191; 3, no. 7 (1953): 242-249, and 3, no. 8 (1953): 296-303.

Charles-Daubert, Françoise. "Libertinage et érudition: Peiresc relais de l'Europe savante." Peiresc et la passion de connaître. Ed. Anne Reinbold. Paris: J. Vrin, 1990. 41-60.

Chossat, R. P. Marcel. Les Jésuites et leurs oeuvres à Avignon (1553-1768). Avignon: Seguin, 1896.

Clément, Jean. "Peiresc et le monastère de Guîtres." Les fioretti du quadricentenaire de Fabri de Peiresc. Ed. Jacques Ferrier. Avignon: Académie du Var, 1988. 75-80.

Collins, Harry M. "The Place of the `Core-Set' in Modern Science: Social Contingency with Methodological Propriety in Science." History of Science. 19 (1981): 6-19.

Conry, Yvette. "Peiresc et l'ordre des `portraits' dans les investigations du xviie siècle." Peiresc ou la passion de connaître. Paris: J. Vrin, 1990. 111-138.

Costabel, Pierre. "Pieresc et Wendelin: Les satellites de Jupiter de Galilée à Newton." Peiresc ou la passion de connaître. Ed. Anne Reinbold. Paris: J. Vrin, 1990. 91-110.

Dainville, François de. "Foyers de culture scientifique dans la France meditérranéenne du xvie au xviiie siècle." Revue d'histoire des sciences et de leurs applications. 1 (1947-1948): 289-300.

D'Amico, John F. "Manuscripts." The Cambridge History of Renaissance Philosophy. Ed. Charles B. Schmitt. Cambridge: Cambridge University Press, 1988. 11-24.

Daston, Lorraine J. "Reviews on Artifact and Experiment." Isis. 79 (1988): 452-470.

Dear, Peter. Mersenne and the Learning of the Schools. Ithaca, NY: Cornell University Press, 1988.

_____. "Totius in verba: Rhetoric and Authority in the Early Royal Society." Isis. 76 (1985): 145-161.

Delisle, Léopold. "Un grand amateur français du dix-septième siècle, Fabri de Peiresc." Annales du midi. 1 (1889): 16-31.

Desplaces, Ernest. "Holstenius." Biographie universelle. Paris: Madame C. Desplaces, n.d. 560-564.

Dibon, Paul. "Communication in the Respublica literaria of the 17th Century." Lecture. Warburg Institute. Jan 1974.

_____. "Communication in the Respublica literaria of the 17th Century." Res Publica Litterarum: Studies in the Classical Tradition. 2 (1978): 43-55.

_____. "Les echanges épistolaires dans l'Europe savante du xviie siècle." Revue de synthèse III. 81-82 (1976) 31-50.

Drake, Stillman. Discoveries and Opinions of Galileo. Trans., intro., and notes by Stillman Drake. Garden City, NJ: Doubleday, 1957.

_____. "A Long-Lost Letter from Galileo to Peiresc on a Magnetic Clock." A Letter from Galileo. Ed. Bern Dibner and Stillman Drake. Norwalk, CT: n.p., 1967.

Dubled, Henri, Jean Bernhardt, Pierre Costabel, and Agnès Bresson, eds. Nicolas-Claude Fabri de Peiresc (1580-1637): Humaniste et savant, sa famille et ses amis. Carpentras: Musée Comtadin, 1981.

Eamon, William. "Arcana Disclosed: The Advent of Printing, the Books of Secrets Tradition and the Development of Experimental Science in the Sixteenth Century." History of Science. 22 (1984): 111-150.

_____. "From the Secrets of Nature to Public Knowledge: the Origins of the Concept of Openness in Science," Minerva. 23 (1985): 321-347.

_____. "From the Secrets of Nature to Public Knowledge." Reappraisals of the Scientific Revolution. Ed. David Lindberg and Robert Westman. Cambridge: Cambridge University Press. 333-365.

Eamon, William, and Françoise Paheau. "The Accademia Segreta of Girolamo Ruscelli, A Sixteenth-Century Italian Scientific Society." Isis. 75 (1984): 327-342.

Eisenstein, Elizabeth L. The Printing Press as an Agent of Change: Communications and Cultural Transformations in Early-Modern Europe. Cambridge: Cambridge University Press, 1979.

Ferrier, Jacques, ed. Les fioretti du quadricentenaire de Fabri de Peiresc. Avignon: Académie du Var, 1988.

Feyerabend, Paul. Against Method, Outline of an Anarchistic Theory of Knowledge. London: Redwood Burn, Limited, 1978.

_____. "Problems of Empiricism, Part II." The Nature and Function of Scientific Theories: Essays in Contemporary Science and Philosophy. Ed. Robert G. Colodny. Pittsburgh: University of Pittsburgh Press, 1970. 275-353.

Fletcher, John E. "Astronomy in the Life and Correspondence of Anathasius Kircher." Isis. 61 (1970): 52-67.

Galilei, Galileo. Dialogue Concerning the Two Chief World Systems. Trans. Stillman Drake. 2nd ed. Berkeley: University of California Press, 1967.

Galilei, Galileo. Sidereus nuncius. Intro. and trans. Albert Van Helden. Chicago: University of Chicago Press, 1989.

Gassendi, Pierre. The Mirrour of True Nobility and Gentility. 6 Books. Trans. William Rand. London: J. Streater, 1657.

Geertz, Clifford. The Interpretation of Culture: Selected Essays by Clifford Geertz. New York: Basic Books, 1973.

Gibson, Sarah S. "Scientific Societies and Exchange: A Facet of the History of Scientific Communication." Journal of Library History. 17 (1982): 144-163.

Gillispie, Charles Coulston. The Edge of Objectivity: An Essay in the History of Scientific Ideas. Princeton, NJ: Princeton University Press, 1960.

Ginzburg, Carlo. "High and Low: The Theme of Forbidden Knowledge in the Sixteenth and Seventeenth Centuries." Past and Present. 73 (1976): 28-41.

Grafton, Anthony. Defenders of the Text: The Tradition of Scholarship in an Age of Science, 1450-1800. Cambridge, MA: Harvard University Press, 1991.

Grant, Edward. "Late Medieval Thought, Copernicus, and the Scientific Revolution." Journal of the History of Ideas. 23 (1962): 197-220.

_____. Physical Science in the Middle Ages. Cambridge: Cambridge University Press, 1977.

Greenblatt, Stephen. "Loudun and London." Critical Inquiry. 12 (1986): 326-346.

Grendler, Paul F. "Printing and Censorship." The Cambridge History of Renaissance Philosophy. Ed. Charles B. Schmitt. Cambridge: Cambridge University Press, 1988. 25-53.

Hacking, Ian. Representing and Intervening: Introductory Topics in the Philosophy of Natural Science. Cambridge: Cambridge University Press, 1983.

Hahn, Roger. The Anatomy of a Scientific Institution: The Paris Academy of Sciences, 1666-1803. Berkeley: University of California Press, 1971.

Hall, Marie Boas. "Oldenburg and the Art of Scientific Communication." Journal for the History of Science. 2 (1965): 277-290.

Hall, Rupert and Maris Boas Hall. "Anglo-French Scientific Communication in the Mid-Seventeenth Century." Science et sociétés: Relations-influences-écoles, xii congrès international d'histoire des sciences. Paris: Albert Blanchard, 1971. 65-69.

Hatch, Robert A. "Books, Experiments, and Poison: Boulliau on Italian Learning and Patronage." Southeast American Society of French 17th-Century Studies, University of South Carolina, 4-6 Oct 1990.

_____. "Boulliau and His Correspondence." Draft. 1987: 6.

_____. The Collection Boulliau (BN, FF. 13019-13059), An Inventory. Philadelphia: The American Philosophical Society, 1978.

Houghton, Walter E., Jr. "The English Virtuoso in the Seventeenth Century." Journal of the History of Ideas. 3 (1942): 51-73.

Howse, Derek. Greenwich Time and the Discovery of the Longitude. Oxford: Oxford University Press, 1980.

Huckaby, Sarah S. "The Accademia dei Lincei: A Study in 17th Century Scientific Communication." Fifth Library History Seminar. Tallahassee, FL: Florida State University Press, 1972. 171-181.

Humbert, Pierre. Un amateur: Peiresc (1580-1637). Paris: Desclée de Brouwer et cie, 1933.

_____. "Les astronomes français de 1610 à 1667." Bulletin de la Société d'études scientifiques et archéologiques de Draguignan. 44 (1942): 5-72.

_____. "L'Astronomie en France au dix-septième siècle," Conférence faite au Palais de la Découverte. 2 Feb 1952: 6.

_____. "La Determination des coordonnées geographiques au debut du dix-septième siècle." Ciel et terre. 8-9 (1938): 233-238.

_____. "Joseph Gaultier de la Valette, astronome provençal (1564-1647)." Revue d'histoire des sciences et de leurs applications. 1 (1947-1948): 314-322.

_____. L'oeuvre astronomique de Gassendi. Paris: Hermann, 1936.

_____. "Le problème des longitudes entre 1610 et 1666." Archives internationales de l'histoire de sciences. (1948): 383-387.

_____. "A propos du passage de Mercure, 1631. Revue d'histoire des sciences. 3 (1950): 27-31.

Hutchison, Keith. "What Happened to Occult Qualities in the Scientific Revolution?" Isis. 73 (1982): 233-253.

Impey, Oliver, and Arthur MacGregor, eds. The Origins of Museums, The Cabinet of Curiosities in Sixteenth- and Seventeenth-Century Europe. Oxford: Clarendon Press, 1987.

Isambert, Jourdan, Decrusy, eds. Recueil général des anciennes lois françaises depuis l'an 420 jusqu'à la révolution de 1789. 29 vols. repr. in 4 vols. Paris: n.p., 1821-1833; repr., Ridgewood, NJ: Gregg, 1964-1966.

Jarvie, I.C., and Joseph Agassi. "The Problem of the Rationality of Magic." Rationality. Ed. Bryan Wilson. 1970; repr, Oxford: Basil Blackwell, 1985.

Joy, Lynn Sumida. Gassendi the Atomist: Advocate of History in an Age of Science. Cambridge: Cambridge University Press, 1987.

Kettering, Sharon. Patrons, Brokers, and Clients in Seventeenth-Century France. New York: Oxford University Press, 1986.

Kibre, Pearl, and Nancy G. Siraisi. "The Institutional Setting: The Universities." Science in the Middle Ages. Ed. David C. Lindberg. Chicago: University of Chicago Press. 120-141.

Kuhn, Thomas. The Structure of Scientific Revolutions. 2nd ed. Chicago: University of Chicago Press, 1970.

Latour, Bruno. Science in Action: How to Follow Scientists and Engineers Through Society. Cambridge, MA: Harvard University Press, 1987.

Lenoble, Robert. Mersenne ou la naissance du mécanisme. 1943; repr., Paris: J. Vrin, 1971.

Libri-Carucci, Guglielmo. "Life of Galileo . . . Vie de Galilée." Journal des savants. March 1841: 157-171; April 1841: 203-223.

Löfgren, Orvar. "On the anatomy of Culture." Ethnologia Europea. 12 (1981): 26-46.

Louyat, Henri. "Une amitié sans faille: Peiresc et Galilée." Les fioretti du quadricentennaire de Fabri de Peiresc. Ed. Jacques Ferrier. Avignon: Imprimerie Aubanel, 1981. 151-167.

Lux, David S. Patronage and Royal Society in Seventeenth-Century France. Ithaca, NY : Cornell University Press, 1989.

Mandrou, Robert. From Humanism to Science, 1480-1700. Trans. Brian Pearce. Middlesex, UK: Penguin, 1978.

_____. Introduction to Modern France, 1500-1640. Trans. R.E. Hallmark. New York: Holmes and Meier, 1976.

Marsak, Leonard M. "The Humanist as Scientist: Nicolas Claude Fabri de Peiresc." Cahiers d'Histoire Mondiale. 8 (1964): 93-99.

Martin, Henri-Jean. Livre, pouvoirs, et société à Paris au xvii siècle (1598-1701). 2 vols. Geneva: Librairie Droz, 1969.

Mauss, Marcel. The Gift: Forms and Functions of Exchange in Archaic Societies. Trans. Ian Cunnison. Glencoe, IL: Free Press, 1954.

Mentzer, Raymond A., Jr. Heresy Proceedings in Languedoc, 1500-1560. Philadelphia: The American Philosophical Society, 1984.

Merton, Robert K. "The Perspectives of Insiders and Outsiders," The Sociology of Science: Theoretical and Empirical Investigations. Ed. Norman W. Storer. Chicago: University of Chicago Press, 1973. 99-136.

_____. "Puritanism, Pietism, and Science." The Sociological Review. 28 (1936): 1-30.

Middleton, William Knowles. The Experimenters: A Study of the Accademia del Cimento. Baltimore: Johns Hopkins Press, 1971.

Moréri, Louis, ed. "Peiresc." Le grand dictionnaire historique ou le mélange curieux de l'histoire sacrée et profane. 10 vols. Paris: Librairies Associés, 1759, 8: 158.

Olmi, Giuseppe. "Science-Honour-Metaphor: Italian Cabinets of the Sixteenth and Seventeenth Centuries." The Origins of Museums: The Cabinets of Curiosities in Sixteenth- and Seventeenth-Century Europe. Ed. Oliver Impey and Arthur MacGregor. Oxford: Clarendon Press, 1987. 6-16.

Omont, H. "Les manuscrits et les livres annotés de Fabri de Peiresc." Annales du midi. 1 (1889): 316-318.

Park, Katharine, and Lorraine J. Daston. "Unnatural Conceptions: The Study of Monsters in Sixteenth- and Seventeenth-Century France and England." Past and Present. 92 (1981): 20-54.

Pearl, Jonathan L. "Peiresc and the Search for Criteria of Scientific Knowledge in the Early 17th Century." Proceedings of the Annual Meeting of the Western Society for French History. 6 (1978): 110-119.

Peck, Linda Levy. Court Patronage and Corruption in Early Stuart England. Boston: Unwin Hyman, 1990.

Pillorget, René. Les mouvements insurrectionnels de Provence entre 1596 et 1715. Paris: Editions A. Pedone, 1975.

Pingré, Alexandre Guy. Annales celestes du dix-septième siècle. Ed. Guillaume Bigourdan. Paris: Gauthier-Villars, 1901.

Pintard, René. Le libertinage érudit dans la première moitié du xviie siècle. Paris: Boivin, 1943; repr. Geneva: Slatkine, 1983.

Pomian, Krzysztof. Collectors and Curiosities, Paris and Venice, 1500-1800. Trans. Elizabeth Wiles-Portier. Cambridge: Polity Press, 1990.

Popkin, Richard. The History of Scepticism: From Erasmus to Spinoza. Berkeley: University of California Press, 1979.

Pottinger, David T. The French Book Trade in the Ancien Regime: 1500-1791. Cambridge, MA: Harvard University Press, 1958.

Prentout, H. "François-Gilles Macé: Un professeur de mathématiques à l'Université de Caen au commencement du xvii siècle." Mémoires de l'Académie nationale des sciences de Caen. 1911: 33-44.

Priou, Jules-Marie. "Magistrat et citoyen français." Les fioretti du quadricentenaire de Fabri de Peiresc. Ed. Jacques Ferrier. Avignon: Académie du Var, 1988. 81-96.

Putnam, George Haven. The Censorship of the Church of Rome. 2 vols. 1906; repr., New York: Benjamin Blom, 1967.

Randall, John Herman, Jr. "The Development of Scientific Method in the School of Padua." Journal of the History of Ideas. 1 (1940): 177-206.

Ratherym, E. J. B. "Peiresc." Nouvelle biographie générale. Paris: Firmin Didot, 1862. 465-466.

Reinbold, Anne ed. Peiresc ou la passion de connaître. Paris: J. Vrin, 1990.

Renaudot, Eusebe, ed. General Collection of Discourses of the Virtuosi of France Upon Questions of all Sorts of Philosophy and other Natural Knowledge. Trans. G. Havers. London: printed for Thomas Dring and John Starkey, 1664.

_____. Another Collection of Philosophical Conferences of the French Virtuosi. Trans. G. Havers and J. Davies. London: n.p., 1664.

Revel, Jacques. "The Uses of Civility." Ed. Roger Chartier. A History of Private Life. 3 vols. Cambridge: The Belknap Press, 1989. 3: 167-205.

Rizzi, Cecilia. Peiresc e l'Italia. Turin: Giappichelli, 1965.

Rochot, Bernard, ed. Lettres familières à François Luillier pendant l'hiver, 1632-1633. Paris: J. Vrin, 1944.

Rodocanachi, E. "Les Courriers pontificaux du quatorzième au dix-septième siècle." Revue d'histoire diplomatique. 26 (1912): 4392-428.

Ronchi, Vasco. "Optics and Vision." Dictionary of the History of Ideas. 4 vols. Ed. Philip P. Wiener. New York: Charles Scribner's, 1973. 3: 407-421.

Rudwick, Martin J.S. The Great Devonian Controversy. Chicago: University of Chicago Press, 1985.

Russell, John L. "Catholic Astronomers and the Copernican System after the Condemnation of Galileo." Annals of Science. 46 (1989): 365-386.

Sabatie, Léon. La Censure. Paris: Pedone, 1908.

Schaffer, Simon. "Glass Works: Newton's Prisms and the Uses of Experiment." The Uses of Experiment: Studies in the Natural Sciences. Eds. David Gooding, Trevor Pinch, and Simon Schaffer. Cambridge: Cambridge University Press, 1989.

Schmitt, Charles B. "Towards a Reassessment of Renaissance Aristotelianism." History of Science. 11 (1973): 159-193.

Severin, Werner J. and James W. Tankard, Jr. Communication Theories: Origins, Methods, Uses. 2nd ed. New York: Longman, 1988.

Shapin, Steven. "History of Science and its Sociological Reconstructions." History of Science. 20 (1982): 157-205.

_____. "The House of Experiment in Seventeenth-Century England." Isis. 79 (1988): 373-404.

_____. "Pump and Circumstance: Robert Boyle's Literary Technology." Social Studies of Science. 14 (1984): 481-520.

Shapin, Steven, and Barry Barnes. "Science, Nature and Control: Interpreting Mechanics' Institutes." Social Studies of Science. 7 (1977): 31-74.

Shapin, Steven, and Simon Schaffer. Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life. Princeton: Princeton University Press, 1986.

Shea, William R. "Galileo, Scheiner, and the Interpretation of Sunspots." Isis. 61 (1970): 498-519.

Solomon, Howard. Public Welfare, Science, and Propaganda in Seventeenth-Century France: The Innovations of Théophraste Renaudot. Princeton: Princeton University Press, 1972.

Soman, Alfred. "Press, Pulpit, and Censorship in France before Richelieu." Proceedings of the American Philosophical Society. Philadelphia: The American Philosophical Society, 1976.

Taton, René. "Le rôle des correspondances scientifiques dans la diffusion de la science au xvii et xviii siècles." Proceedings of the International Congress on the History of Sciences. Tokyo: Science Council of Japan, 1974. 214-229.

Taton, René and Curtis Wilson, eds. Planetary Astronomy from the Renaissance to the Rise of Astrophysics, Part A: Tycho Brahe to Newton. Cambridge: Cambridge University Press, 1989.

Toulmin, Stephen, and June Goodfield. The Fabric of the Heavens: The Development of Astronomy and Dynamics. New York: Harper & Row, 1961.

Uri, Isaac. Un cercle savant au xviie siècle: François Guyet (1575-1655). Paris: Hachett, 1886.

Van Helden, Albert. "Galileo, Telescopic Astronomy, and the Copernican System." Planetary Astronomy from the Renaissance to the Rise of Astrophysics, Part A: Tycho Brahe to Newton. Ed. René Taton and Curtis Wilson. Cambridge: Cambridge University Press, 1989. 81-105.

_____. "The Importance of the Transit of Mercury of 1631." Journal of the History of Astronomy. 7 (1976): 1-10.

_____. "The Telescope in the Seventeenth Century." Isis. 65 (1974): 35-58.

Verd, Yvan. "Peiresc et les médecins." Les fioretti du quadricentenaire de Fabri de Peiresc. Avignon: Académie du Var, 1988. 117-125.

Wade, Ira. The Intellectual Origins of the French Enlightenment. Princeton, NJ: Princeton University Press, 1971.

Wigham, Frank. Ambition and Privilege, The Social Tropes of Elizabethean Courtesy Theory. Berkeley: University of California Press, 1984.

Whitaker, Ewen A. "Selenography in the Seventeenth Century." Planetary Astronomy from the Renaissance to the Rise of Astrophysics, Part A: Tycho Brahe to Newton. Ed. René Taton and Curtis Wilson. Cambridge: Cambridge University Press, 1989. 119-123.

Wootton, David. Paolo Sarpi, Between Renaissance and Enlightenment. Cambridge: Cambridge University Press, 1983.

Yates, Frances A. The French Academies of the Sixteenth Century. 1947; repr., London: Routledge, 1988.

Zagorin, Perez. Ways of Lying: Dissimulation, Persecution, and Conformity in Early Modern Europe. Cambridge, MA: Harvard University Press, 1990.

BIOGRAPHICAL SKETCH

Jane Thornton Tolbert was born on 22 April 1952 in Danville, Va. She received her B.A. in French (1973) and M.A. in journalism (1975) from the University of Florida. She lived in Antibes and Le Bar-sur-Loup, France, for ten years, where she worked as a writer, before returning to the university to begin the doctoral program.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

F. Leslie Smith, Chair
Professor of Journalism and Communications

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Mickie Edwardson
Distinguished Service Professor of Journalism and Communications.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Kurt Kent
Professor of Journalism and Communications

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Howard S. Pactor
Associate Professor of Journalism and Communications

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophys.

Robert A. Hatch
Associate Professor of History

This dissertation was submitted to the Graduate Faculty of the College of Journalism and Communications and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

May 1992

Ralph Lowenstein
Dean, College of Journalism and Communications

Madelyn M. Lockhart
Graduate School, Graduate School

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3 1262 08553 4971